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THE ARMS CONTROL AND CRISIS MANAGEMENT POTENTIAL OF THE PROPOSED INTERNATIONAL SATELLITE MONITORING AGENCY (ISMA)

by Dr. ROBIN RANGER

ORAE EXTRA-MURAL PAPER NO. 34

ORAE

OPERATIONAL RESEARCH & ANALYSIS ESTABLISHMENT
OTTAWA

Canada UNCLASSIFIED DECEMBER 1984

DEPARTMENT OF NATIONAL DEFENCE

CANADA

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Prepared under DND Contract: 2SV82-00007

OTTAWA, CANADA DECEMBER 1984

ABSTRACT

This study investigates the potential contribution of an International Satellite Monitoring Agency (ISMA) to the verification of compliance with arms control agreements and also to crisis management. The basic characteristics of an ISMA and the theoretical bases for its contribution are outlined, as are the potential practical difficulties it is likely to encounter in principle. An assessment is then given of the limitations of verification capabilities and the resultant problems posed for compliance policy in a representative selection of arms control agreements--those limiting strategic nuclear forces, chemical and biological weapons and, in the inter-war years, naval forces.

The conclusion is that there are considerable technical and political limits on verification capabilities and on enforcing compliance with such agreements. These limits have proved significantly larger than anticipated in the arms control literature. They suggest that an ISMA would have difficulty, in practice, in making the contribution to arms control envisaged in theory. A similar conclusion applies to the more demanding task of contributing to crisis management.

RÉSUMÉ

Cette étude examine le rôle qu'un organisme international de surveillance par satellite pourrait jouer pour vérifier si les accords relatifs au contrôle des armements sont respectés et pour gérer les crises. L'étude contient d'abord une description des caractéristiques fondamentales d'un tel organisme et les aspects théoriques de son rôle, ainsi que les difficultés qui gêneraient son fonctionnement, en principe. Elle comprend également une évaluation des limites qui seraient imposées à l'organisme, et des problèmes qui en découlent à l'égard d'une série représentative d'accords de contrôle des armements--par exemple, ceux qui limitent les forces nucléaires stratégiques, les armes chimiques et biologiques et, dans les années entre deux guerres, les forces navales.

L'étude conclut qu'il existe d'énormes limites techniques et politiques en ce qui concerne le potentiel de vérification et la mise en application des accords. Ces limites se sont révélées bien plus importantes que prévu dans la documentation relative au contrôle des armements. Il semble qu'un organisme international de surveillance par satellite aurait de la difficulté, en pratique, à jouer le rôle qu'on lui attribue en théorie. Une conclusion semblable s'applique quant à la tâche plus exigeante qui lui serait confiée en matière de gestion des crises.

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CHAPTER 1

Introduction

The 1978 French proposal for an International Satellite Monitoring Agency (ISMA) has attracted some modest, but significant, international attention.[1] It attempts to contribute to international stability in two ways. First, it attempts to provide for multilateral, politically unbiased verification of arms control agreements, thus improving compliance with them. Second, it attempts to improve crisis management capability. This applies particularly to an ISMA's theoretical ability to provide neutral, and therefore genuinely mutual reassurance against surprise attack where two sides in a conflict are not proposing to launch an attack on each other, but each fears that the other side may be preparing to launch such an attack.

In a broader sense, the French proposal reflects the widespread feeling in the international community that verifying arms control agreements and managing crises is (to paraphrase French Prime Minister Clemenceau's comment on war) too important to be left to the two superpowers. This view is reflected, for example, in the Swedish government's support for an ISMA, first proposed by their former Ambassador to the Geneva disarmament negotiations in 1974.[2] Mrs. Alva Myrdal argued, then, that satellite monitoring is

a vital verification tool, albeit insufficient on its own. It was therefore wrong, in her view, for the two superpowers to have an effective monopoly on verifying their own compliance, and that of other parties, with arms control agreements. Since such verification is a common international interest, it should, she argued, be provided for internationally, with an appropriate organization, funding, and technical capabilities. The same holds true, she also argued, for crisis management. Here there is an additional ground for supporting an ISMA. The two superpowers may sometimes have interests in a regional conflict that may make them unable, or unwilling, to use their satellite reconnaissance capabilities to manage a conflict in such a way as to diffuse it.

Successive Swedish governments have strongly supported these arguments. A typical restatement of their position was offered in September, 1982 by Mrs. Inga Thorsson, Swedish Under-Secretary of State for Disarmament: "The smaller nations have maintained from the very beginning that we cannot possibly allow the superpowers, who have the technical resources at this time for space activities, to have the monopoly on observation satellites of this kind. Satellite information must be shared by the international community...."[3] She went on to note that, at that year's annual Pugwash meeting, one of the founders of the Pugwash movement, the Australian scientist Sir Mark Oliphant, had

launched the idea of the "technology of the skies." He suggested that, if it is not possible to establish such an activity within the United Nations, then a number of individual nations should come together and try to collect the financial means necessary and establish this service.

Such thinking has naturally appealed to those individuals and groups sympathetic to the ideals of the international Pugwash movement. Named after Pugwash, the Nova Scotia home of the Canadian millionaire Cyrus Eaton, who was instrumental in its foundation in 1958, this movement is composed of scientists and citizens anxious to improve international understanding.[4] Notable Canadian supporters of the ISMA concept have included members of the Pugwash movement.[5] Similarly, support for the ISMA concept in Great Britain has come from circles sympathetic to the Pugwash philosophy of arms control.[6]

Official French support for the idea of an ISMA originated with the conservative government of President Giscard d'Estaing. It has continued under his socialist successor, Francois Mitterand. Such support seems to be based on two considerations.[7] First, an ISMA is in accord with an important principle of French foreign and defence policy. This is that the superpowers should not have exclusive responsibility for security questions of importance to other countries. Verifying compliance with arms control agreements and managing crises are two important areas of multi-

lateral security concerns that could, from the French perspective, be better managed on a multilateral basis through an ISMA. Second, France has a tradition, in her arms control diplomacy, of proposing multilateral means of managing, or discussing, multilateral problems. For example, the current Conference on Confidence and Security Building Measures and Disarmament in Europe underway in Stockholm originated, to a considerable degree, in a 1978 French proposal for a Conference on Disarmament in Europe (CDE).

In the official French view, the feasibility of an ISMA is thus clearly worth exploring. If a workable ISMA could be devised, it would contribute to the verification of arms control agreements and the management of crises. How much of a contribution it could make is not known, but even a modest contribution would be worthwhile. France has been careful though, to reserve judgment as to whether a technically and politically effective ISMA could be constructed, at acceptable costs. It has also reserved judgment as to whether, even if this could be done, the resultant contribution to verification and crisis management would be worth the effort involved.

It is important to draw attention to the underlying philosophy behind the ISMA idea for two reasons. First, the idea of arms control as an essentially technical problem that can be solved by techno-

logical fixes, plus the application of unbiased scientific method, is widespread in the West.[8] This is particularly true of the two arms control functions to which an ISMA would contribute: verification of compliance with arms control agreements and the enforcement of compliance. Second, the way in which verification machinery and compliance policy work in practice is very different from the way it is thought to work in this scientific, technical model of arms control.[9]

This means that while an ISMA would have considerable merit if it could function as advertised by its proponents, it may not be able to do so. Such a suggestion must be necessarily hypothetical, since there is no operational experience with an ISMA. But there is a surprisingly large amount of relevant data available from which a realistic assessment can be made of how well an ISMA is likely to function. This data falls into four categories. First, the theoretical arms control literature, especially that on verification and compliance. Second, the practical experience with verification machinery and compliance policies in the Western democracies since 1958 and in the inter-war years. Third, experience with international organizations' contribution to the verification of arms control agreements, their contribution to crisis management, their contribution to preventing crises sliding into war and in limiting wars if they do occur. Because so

much data relevant to an ISMA's functioning is available, both the bibliography and the information given in this study have had to be in summary form in order to be comprehensive.

In one important respect, though, the data in the public domain is deficient. There have been no serious studies of how an ISMA might perform its arms control verification and compliance functions, as well as its crisis management functions. The lack of such studies is surprising, especially from the large and well-informed U.S. arms control community. It has never failed to investigate in depth any promising arms control concept, and many, such as world peace through world law, appear more utopian than realistic. In fact, it must be said that this community does not, at present, appear to regard the idea of an ISMA as one worth much serious attention, because it is not seen as workable.[10] Whatever the accuracy of this assessment, it is a significant expression of scepticism about the ISMA idea from a community that might have been expected to support it.

There are clearly two sets of questions about the workability of an ISMA system. The first set are technical, complex, and often highly classified. These have to do with its precise technical capabilities in gathering information; the processing, interpretation and dissemination of the data gathered; the organizational structure of the ISMA; and its

funding. These questions are beyond the scope of this study. They have been answered, in outline, in a 1981 report by a U.N. commission of experts established to investigate the ISMA proposal. This is therefore summarized below to set the technical context. The second set of questions relating to an ISMA are concerned with how well it could perform its arms control verification and crisis management functions, given these technical capabilities. A related, vital, but usually overlooked question is whether its technical verification function, even if performed adequately, would, in fact, make the expected contribution to ensuring compliance with arms control agreements.

Accordingly, this study will examine the potential contribution of an ISMA to arms control (verification and compliance) and crisis management.

Notes

[1]This is best summarized in the annual Yearbook of the Stockholm International Peace Research Institute, published from 1973 onwards. A thorough search of the extensive arms control literature has failed to locate any major analyses of this ISMA proposal other than those noted in this Chapter (see footnote 9 below). These are limited to three main sources: Myrdal (1974); SIPRI Yearbook (annual); and the U.N. Study on the Implications of Establishing an International Satellite Monitoring Agency, U.N. General Assembly Document A/AC.206/14, 6 August 1981.

[2]Alva Myrdal, "The International Control of Disarmament," Scientific American, Vol. 231, No. 4, October 1974, pp. 21-33. This makes a large number of assertions about the potential contribution of what Myrdal calls an International Disarmament Control Organization (IDCO) similar to an ISMA, but these are not substantiated. These may be overly

optimistic. For example, two typical assertions are as follows: "Nonetheless, the main assumption retains its strength, namely that the political commitment made when entering an arms control agreement is the most reliable guarantee [of compliance], whether or not it is supported by technical devices for detection" (p. 22); and "Citizens should be counted on to serve as the watchdogs ensuring that disarmament agreements are respected and that any moves in the direction of militarization are pushed back" (p. 29). In the light of the January 23, 1984 U.S. Presidential Report on Soviet violations of, and non-compliance with, arms control agreements, it is clear that the Soviet Union has entered into some arms control agreements without making a commitment to comply with them. It is also difficult to see how Soviet citizens could act as watchdogs ensuring that these agreements are respected. Ambassador Myrdal developed her views in The Game of Disarmament: How the United States and Russia Run the Arms Race (New York: Pantheon, 1977).

[3]Interview with Under-Secretary Inga Thorsson, Transition, Biannual Journal of the Institute for World Order, Vol. 5, No. 2, September, 1982, pp. 1-4.

[4]An excellent history of the Pugwash Movement by its former Secretary-General is: John Rotblat, Scientists in the Quest for Peace: A History of the Pugwash Conferences (Cambridge, Mass.: MIT Press, 1972). Current Pugwash thinking is reflected in the monthly Bulletin of the Atomic Scientists founded in 1946.

[5]See, e.g., Abram Chayes, William Epstein and Theodore B. Taylor, "A Surveillance Satellite for All," Bulletin of the Atomic Scientists, Vol. 33, No. 1, 1977, p. 7; T. Toyoda, "Technical Feasibility of International Satellite Monitoring System for Strategic Arms," Proceedings of the 28th Pugwash Conference (Varna, Bulgaria, September 1-5, 1978); Ernie Regehr, "Averting Nuclear Holocaust," The Canadian Forum, Vol. 64, No. 711, August 1981, pp. 16-19.

[6]See, e.g., Wayland Kennett and Elizabeth Young (Lord and Lady Kennett), Neither Red Nor Dead: The Case for Disarmament, Social Democratic Party (SDP), Open Forum Paper No. 2, 1982. As they put it: "Verification is a common international interest which must be provided with its own international structure and equipment." (p. 35)

[7]This discussion draws on an excellent recent study of French arms control policy: David Yost, France's Deterrence Posture and Security in Europe, Adelphi Paper (London: International Institute for Strategic Studies, forthcoming).

[8]A useful restatement of the Pugwash view of the arms race and arms control was the published version of the 1978 Pugwash Annual Conference held in Toronto. See Franklyn Griffiths, ed., The Dangers of Nuclear War (Toronto: University of Toronto Press, 1979).

Three useful accounts of arms control, lucidly written by journalists, are important because they reflect the widespread belief that, difficult though the problems of verification and compliance still are, they are no longer the barrier to effective arms control agreements that they were before the introduction of reconnaissance satellites. These accounts are: Chalmers M. Roberts, The Nuclear Years: The Arms Race and Arms Control 1945-70 (New York: Praeger, 1971); John Newhouse, Cold Dawn: The Story of SALT I (New York: Holt, Rinehart and Winston, 1973) and Strobe Talbott, Endgame: The Inside Story of SALT II (New York: Harper & Row, 1979).

[9]This point was constantly stressed by those interviewed. The best exposition in the open literature is Amron Katz, "The Fabric of Verification: The Warp and the Woof," in William Potter, ed., Verification and SALT, The Challenge of Strategic Deception (Boulder, Colo.: Westview Press, 1980). See also Katz's other writings listed in this bibliography.

[10]This conclusion is based primarily on interviews but confirmed by the negative findings of an extensive literature search. There were no significant studies of the ISMA concept other than those cited in footnotes 1 and 2 above. Even more significantly, Arms Control Today, the monthly journal of the influential Arms Control Association, based in Washington, D.C., had not, as of January 1984, published an analysis of the ISMA. The significance of this is that Arms Control Today goes to great lengths to reflect the thinking of the serious Western arms control community and has never failed to pick up any serious arms control proposals. Its monthly bibliography on arms control is also unsurpassed.

CHAPTER 2

Characteristics of the Proposed ISMA

As already noted, the idea of an international arms control monitoring agency, utilizing satellite technology, is not new. Indeed, conceptually it builds on an idea as old as that of disarmament: the establishment of an impartial, international tribunal to verify arms reductions and assist in the peaceful resolution of potential conflicts. The innumerable disarmament plans debated so extensively, and futilely, in the League of Nations between the end of World War I and the start of World War II almost always contained provision for international verification machinery, plus mechanisms for the peaceful settlement of disputes.[1] Until the introduction of reconnaissance satellites, post-1945 proposals for disarmament and what came, after 1958, to be known as arms control, often contained such features.[2] They were particularly necessary, given the Soviet Union's obsessive secrecy, combined with their rejection of any verification by the Western powers involving inspection on Soviet territory.[3] The introduction of reconnaissance satellites, starting with the U.S. SAMOS series (Satellite and Missile Observation System) in mid-1961, appeared to have lessened, or removed, the need for intrusive verification on the territory of the Soviet Union, or

of other closed societies that are parties to arms control agreements. It now appears that this was not the case. This was explained, for example, by the then (1981-83) Director of the U.S. Arms Control and Disarmament Agency (ACDA), the Hon. Eugene Rostow, in an important series of speeches. They paved the way for the President's 1984 Report on Soviet Noncompliance.[4] But the idea that satellite reconnaissance, primarily providing photographic intelligence, and also providing electronic and signal intelligence (ELINT/SIGINT) as an adequate verification tool, has become prevalent.

Hence the emergence, from 1973 onwards, of proposals for international participation in the verification of arms control agreements by satellite. France's 1978 ISMA proposal may thus be regarded as codifying the existing thinking among proponents of this idea. The ISMA would be a specialized agency of the U.N., collecting, processing and disseminating information secured by means of earth observation satellites. The French proposal was accurately summarized by the Stockholm International Peace Research Institute (SIPRI) as follows:

> The functions of the agency would include participation in monitoring the implementation of international disarmament and security agreements, whether already in force or to be concluded, as well as participation in the investigation of a specific situation either at the request of one state, with the consent of the state to be inspected, or at the re-

> quest of the UN Security Council. The expansion of the technical resources of the agency would take place in three stages. In the first stage, the agency would have a centre for processing data supplied by states having observation satellites; in the second stage, the agency would establish data-receiving stations which would be directly linked to these states' satellites; and in the third stage, the agency itself would have the observation satellites required for the performance of its task.[5]

In addition, the ISMA satellites could assist in crisis management, especially in settling disputes between nations, by providing two kinds of information: first, that needed by U.N. observers and peace-keeping forces, and, second, that providing early warning of potential armed conflicts.

The U.N. Experts Report on ISMA

In the 1978 United Nations Special Session on Disarmament (UNSSOD I) debate, France's ISMA proposal received considerable support from Third World countries and Sweden. The U.S., however, expressed doubts that an ISMA could work as required. France was nevertheless able to persuade the U.N. General Assembly (UNGA) to establish a group of experts to report on the possibilities for establishing an ISMA. Their report, On the Implications of Establishing an ISMA, was presented to the 1982 UNSSOD II. SIPRI summarized the conclusions this way:

> ... (a) space technology would allow observations from satellites for the verification of compliance with arms control and disarmament treaties and for monitoring crisis areas on Earth; (b) there is no provision in any international law that would prevent an international government agency from carrying out observations by satellite; and (c) the financial burden of the agency in its final phase, when it launches and operates its own satellites and carries out data processing and analysis, is expected to be about $1,500 million (for one satellite) spread over a 10-year period. In any case the annual cost of an ISMA to the international community would be very much less than 1 per cent of the total yearly expenditure on armaments.
>
> The first conclusion is based on the fact that the capabilities of civilian space technology for observing the Earth's surface are beginning to approach those of military technology in many respects. ... More importantly these countries are also acquiring the technology for image processing, essential for the interpretation of data from space. ...
>
> There are a number of issues to be resolved before an ISMA could be created. Verification could not be carried out from space alone and data from other sources would be necessary. A number of existing international organizations could be involved in the verification of some specific arms control/disarmament treaty, such as the World Health Organization, the World Meteorological Organization, the International Atomic Energy Agency and the International Telecommunications Union. Difficult questions concerning the modalities of data acquisition and dissemination, of direct relevance to the sensitive security considerations of states, must be dealt with.[6]

There were, however, some important negative considerations summarized by SIPRI as: "There are political, organizational and financial difficulties. The idea of an ISMA could be the beginning of a multinational verification

agency. However, both the USA and USSR have so far been negative, and have refused to participate in the group."[7]

The validity of these conclusions is rather more questionable than might be thought from such a substantial document (120 pages long) prepared by a group of international experts. Their report omitted any serious discussion of the problems of verifying compliance with arms control agreements and of crisis management. Presumably, this was because these issues are politically sensitive, especially for the Soviet Union. Instead, the experts concentrated on the politically more neutral investigation of the technical, legal (including organizational) and functional implications of an ISMA. Regrettably, this approach encourages the widespread misperception that the problems of verification and compliance can be resolved by the provision of adequate technical capabilities. From the research conducted for this study, it appears that this may not be an accurate assessment.

On the contrary, it is clear that, whatever the technical capabilities of an ISMA were, it would face two major problems. One would be the technical difficulty of interpreting the data it acquired. This would appear to be a much greater problem than is usually realized. The other problem would be political. If evidence of potential violations were identified, this would be politically sensitive. It would have to be raised through diplomatic channels. But

these agencies could not deal with the issue if the potential violating state rejected the evidence of violations. This has, for example, been the U.S. experience with the Soviets.

It appears that even if an ISMA could be established, with the technical capabilities deemed adequate by the UNGA experts study, it might not be able to function effectively. Technically, the problem of correlating and interpreting the data it gathered would be formidable. In many cases, they would be insuperable. Politically, an ISMA organization would have difficulty in functioning as an impartial verification and crisis management body. Primarily, this would be because the Soviet Union would, unless it reversed its post-war policy, not want an ISMA to function effectively. If it did so, it might be able to detect Soviet violations of arms control agreements and exploitations of crises when these occurred. Additionally, not all Third World U.N. members would necessarily wish an ISMA to function effectively. This would apply, for example, to Soviet allies assisting the Soviets to violate arms control agreements, as in their apparent use of Chemical and Biological Weapons (CBW).[8] It would also apply to countries attempting to manufacture their own nuclear weapons, though they would not be in violation of the 1968 Non-Proliferation Treaty (NPT) if they had not ratified it. In the case of crisis management, any country that felt a crisis was not being managed in such a

way as to suit its interests would oppose this management, and any contribution made by an ISMA.

From the U.S. viewpoint, an ISMA that was not able, or not permitted, to function effectively would not be able to detect noncompliance with arms control agreements when it occurred. But countries that were not complying would be likely to use an ISMA failure to establish this as proof that they were complying. A very difficult situation would arise if, for example, the U.S. found the Soviets guilty of noncompliance, as they have, and an ISMA were unable, or unwilling, to do so for technical and political reasons. Presumably, the Soviets would claim that this proved their innocence.

These substantive obstacles to an ISMA's successful operation will now be considered. For the purposes of this analysis, it will further be assumed, when referring to an "ISMA," that this would have the technical capabilities, in terms of data acquisition, transmission and retrieval, deemed necessary by the UNGA experts' study. It will also be assumed, contrary to the available evidence, that the Soviet Union and U.S. would drop their opposition to its establishment and that the massive financial and organizational problems involved could be overcome. The question to be investigated is, therefore: how well could an ISMA, with these capabilities, perform its functions if such a U.N. agency were established?

Notes

[1]See the summaries in the four seminal works from the period (1958-62) when modern arms control thinking first emerged: Donald G. Brennan, ed., Arms Control, Disarmament and National Security (New York: George Braziller, 1961); Hedley Bull, The Control of the Arms Race: Disarmament and Arms Control in the Missile Age (London: Weidenfeld and Nicolson, 1961); Ernest W. Lefever, ed., Arms and Arms Control (New York: Praeger, 1962); and Thomas C. Schelling and Morton H. Halperin, Strategy and Arms Control (New York: The Twentieth Century Fund, 1961). Also useful are Bernard G. Bechhoeffer, Postwar Negotiations for Arms Control (Washington, D.C.: The Brookings Institution, 1961), and Richard Dean Burns, "International Arms Inspection Policies Between World Wars 1919-1934," Historian, Vol. 31, August 1969, pp. 583-603.

[2]The best known of these was President Eisenhower's 1955 Open Skies proposal, for unimpeded access for reconnaissance flights over U.S. and Soviet territory by the other superpower. This was rejected by the Soviets, forcing the U.S. to build the U-2 reconnaissance aircraft to overfly the Soviet Union.

[3]This characterization of the Soviet position remains accurate to this day.

[4]See especially the Hon. Eugene Rostow, Nuclear Arms Control and the Future of U.S.-Soviet Relations, address before the Los Angeles World Affairs Council, September 10, 1982; and the President's Report on Soviet Non-Compliance with Arms Control Agreements (White House: Office of the Press Secretary, January 23, 1984).

[5]SIPRI Yearbook 1979 (London: Taylor & Francis, Ltd., 1979).

[6]SIPRI Yearbook 1982 (London: Taylor & Francis, Ltd., 1982).

[7]Ibid., Introduction, p. xli.

[8]See Chapter 7 below, especially the works cited in footnotes 1, 2, 4, 5, 7 and 8.

CHAPTER 3

An ISMA's Theoretical Contribution to Verification and Compliance

Because these two concepts are still not well understood, it is necessary to distinguish between verification and compliance in theory and in practice. The prevalent theoretical model of verification and compliance in the arms control literature corresponds closely with the public image of the verification requirements needed to make compliance policy work, so the two will be examined together.

In both the theoretical literature and the public image, it is assumed that adequate verification capabilities are sufficient, or nearly sufficient, to ensure compliance with arms control agreements. The term "adequate" is necessarily imprecise. But it is used in the sense of less than perfect (100%) verification, which is still sufficient to identify violations of potential military significance well before these can upset the military balance.

The precise definition of adequate verification depends on the particular arms control agreement involved. It also depends on the political context within which an agreement is concluded. This political context will include such factors as the political importance attached to the agreement, and the domestic political systems of the parties to

the agreement, especially the degree to which they are open or closed. It will also, very importantly, depend, for democratic societies, on the essentially political judgment as to the military risks which are worth taking to reach, and maintain, a specific arms control agreement. Since an open society cannot have perfect verification capabilities vis-à-vis a closed society, it has to accept the military risk of imperfect verification. The question of how much risk is acceptable is essentially a political one.

This concept of imperfect, but adequate, verification can be illustrated by the 1972 Strategic Arms Limitation Talks (SALT I) Interim Agreement on the Limitation of Offensive Nuclear Forces, as it applied to Intercontinental Ballistic Missiles (ICBM).[1] It did not limit ICBMs, but the fixed-silo launchers for these missiles, excluding 150 silos claimed by the Soviets to be Command and Control centers. The limits on fixed-silo ICBM launchers was fixed at 1,054 for the U.S. and 1,618 for the Soviets. The U.S. accepted these limitations, knowing that the Soviets would enjoy perfect verification of U.S. compliance, while the U.S. would have imperfect verification of Soviet compliance. Both parties would rely on what are known as National Technical Means (NTM) of verification. But the Soviets could, in practice, largely verify U.S. compliance by monitoring the open literature, especially U.S. Senate and Congressional Hearings. In contrast, the U.S. NTM would have to

verify compliance in a closed Soviet society. The U.S. could expect to monitor the number of Soviet fixed-silo launchers for ICBMs fairly accurately. The U.S. could not monitor the number of reload ICBM for these silos. These could be significant. The U.S. could not monitor austere, non-silo ICBM launchers, which could be as simple as a concrete square. The U.S. could not monitor, accurately, Soviet deployment of mobile ICBMs, such as the SS-16. Deployment could be detected, over time, but the number of such missiles deployed could only be estimated.

The U.S. political judgment, in ratifying the SALT I Interim Freeze, was that U.S. NTM would be adequate if the combination of the Soviet ICBM forces it could monitor with high, medium and low confidence would not threaten U.S. military security. This force would comprise the 1,618 fixed-silo ICBM launchers included in the SALT I limits, the 150 excluded, the 18 launchers at the Tyuratam test range, the mobile SS-16 ICBM force (if it were deployed despite the SALT I prohibition on doing so), the reload ICBM force (size unknown), and the potential ICBM force with austere launchers (size also unknown).

In this SALT I example, the Soviets had, effectively, perfect verification capability not only through their NTM, but because the U.S. is an open society. In contrast, the U.S. has only an imperfect verification capability, because the Soviet Union is a tightly closed society in terms of

military matters. This asymmetry between open and closed societies was well understood in the early arms control literature, but has become less well understood. In both the literature and in the public mind, the erroneous idea has grown up that NTM, especially reconnaissance satellites, have substantially eroded the difference between open and closed societies as far as the verification of arms control agreements is concerned.[2]

This misperception of the reality of verification is reinforced by the general lack of understanding, in the public arms control debate, of the complex relationship between verification and compliance. Instead, reliance is placed on a simple model of verification and compliance, which makes five assumptions about the nature of arms control agreements, verification and compliance, and the relationship between them.[3]

Assumption 1. Adequate NTM verification capabilities will, by definition, provide unambiguous evidence of militarily significant violations. (In the case of the SALT I agreement described above, U.S. NTM could clearly establish any militarily significant Soviet deployment of ICBM and launchers over 1,618.)

Assumption 2. Arms control agreements are unambiguous, so that violations of their limitations can be precisely established and defined. (In the SALT I agreement, it was assumed that the U.S. and U.S.S.R.

had arrived at a mutually acceptable, and effective, definition of what constituted ICBM launchers).

Assumption 3. If a significant violation of an agreement is established, compliance will be enforced by either abrogation of the agreement (the ultimate sanction) or, more likely, by the injured party to the agreement taking appropriate offsetting actions in one, or more, of three relevant contexts: (a) within the context of the agreement violated; (b) within the context of other arms control agreements and negotiations; or (c) within the context of its broader relations with the violating state.

Assumption 4. The self-interest of the injured parties compelling them to enforce compliance will be reinforced by (a) domestic public opinion in the democracies, especially in the U.S., which will compel an appropriate response to any violations; and (b) world (actually state) public opinion, which will bring diplomatic pressure to bear on a violator to re-establish compliance with the violated agreement.

Assumption 5. Since a violating state will have entered into the violated arms control agreement for reasons of self-interest, it will have a vested interest in ensuring it is observed. Such violations that occur are therefore likely to be accidental, rather than intentional. Any intentional violations will be

attempts to push to, or slightly beyond, the limits of the agreement, and to test the adequacy of the other parties' verification capabilities. A persistent policy of controlled violations would be detected and would threaten the whole arms control process. Such a policy would therefore be extremely unlikely.

Individually and collectively, these five assumptions have proved to be less than wholly valid in the light of experience with arms control agreements since 1958. Nonetheless, they are still widely held and form the basis for assuming that an ISMA could make a major contribution to arms control.

How ISMA Is Expected to Function in Theory

It is assumed that an ISMA would need to provide a reasonably comprehensive satellite reconnaissance coverage for arms control purposes of the territory of the two superpowers and of East and West Europe. In addition, it would need to provide adequate coverage of other geographic areas relevant to arms control agreements, such as the 1968 Non-Proliferation Treaty (NPT) and some form of "on-call" coverage of areas where crises could occur, such as the Middle East. The coverage would have to be adequate to monitor the relevant arms control agreements that have been,

or could be, concluded. Because these agreements and the associated geographical areas are numerous, an illustrative summary is given in Table 1 below.

Table 1

Major Arms Control Agreements, Geographical Areas, Illustrative Military Activities and Installations an ISMA Might Have to Monitor

Arms Control Agreement	Geographical Area	Illustrative Military Activity & Installations
BILATERAL		
SALT I & II Future START I	U.S. and U.S.S.R. territory	Known/potential fixed-silo ICBM deployment areas Known/potential mobile ICBM deployment areas Known/potential storage depots for stored ICBM Known/potential IRBM/MRBM deployment storage areas Known/potential IRBM/ICBM manufacturing areas Known/potential Submarine Launched Ballistic Missile (SLBM), Sea Launched Cruise Missile (SLCM) and submarine (S3BN/SSGN/SSG) manufacturing and port areas Medium/Long-Range Bomber and Air-Launched Cruise Missile (ALCM) manufacturing/ storage/deployment areas
Canadian Prime Minister Trudeau's proposed ban on Missile Flight Tests (1978, UNSSOD I; 1982, UNSSOD II)	U.S. and U.S.S.R. territory	Test ranges for all of the above weapons systems

Table 1 (continued)

Three-Power (U.S., U.K., U.S.S.R.) Partial Test Ban (1963)	U.S., U.K., U.S.S.R. territory	Actual/potential test sites underground, underwater, & in outer space Potential test sites in outer space Atmospheric tests at established/improvised test sites
Possible ban on Anti-Satellite (ASAT) weapons	U.S., U.S.S.R. territory, plus outer space	Known/potential sites for testing/manufacture/deployment of ground-launched and air-launched ASAT (would include all major air bases). Includes ground-launched space-based ASAT.
MULTILATERAL		
Agreement on Mutual and Balanced Force Reductions (MBFR)	U.S., Canada, NATO-Europe, U.S.S.R., Warsaw Pact	Existing and potential areas of major military force concentrations Major air bases Major equipment stockpile areas
Ban on Chemical Weapons (CW) production proposed by Federal German Republic (1982)	All relevant territorial areas	Major chemical processing plants Known/potential CW manufacturing/storage sites CW/Biological Warfare (BW) exercise areas Areas of suspected Soviet CBW usage in Afghanistan and Indo-China

Table 1 shows, that even an illustrative sample of the arms control agreements, actual and potential, would require that an ISMA monitor and impose formidable demands on its technical capabilities. The financial costs would be commensurately high. But, for the purposes of this study, it has been assumed that such capabilities might be provided. The question then becomes: how will these capabilities supplement, in theory, existing NTM of verifications? Three main functions can be identified.

Function 1: To provide impartial evidence, supplementing existing NTM, that violations of arms control agreements have, or have not, occurred.

The first part of this function is obvious. But the second, providing evidence that no violations, or potential violations, have occurred, is equally important. Because an ISMA would, theoretically, provide a neutral evaluation of the data it collected, it could (again theoretically) reassure the parties to an arms control treaty that it was not being violated. This would apply particularly to the superpowers. In the view of ISMA proponents, the same data could be wrongly interpreted by an overly suspicious superpower, as indicating that the other superpower was violating an agreement when it was not. An ISMA could also, in their view, perform a similar reassurance function in a multilateral arms control agreement where unjustified, if understandable, suspicions of violations had occurred. An ISMA would thus have a positive function, establishing that violations have occurred, and a negative function, establishing that violations have not occurred. Both place heavy reliance on the interpretation, as distinct from the collection, of reconnaissance data. This problem is accentuated by the fact that the data collection capabilities of an ISMA system are almost certain to be less advanced than those of the superpowers' NTM systems.

This first function of an ISMA depends on assumptions (1) and (2) in the simple, theoretical model of verification

and compliance. These are that, first, adequate verification capabilities, defined in terms of data collection, can provide concrete evidence of militarily significant violations, and, second, arms control agreements are precise so that the nature and extent of the violations can be clearly defined.

Function 2: To reinforce existing sanctions against non-compliance.

If the ISMA's finding of violations of arms control agreements is both neutral, and internationally accepted as neutral, it will reinforce the self-interest of the injured parties, plus the other motives outlined in Assumption (4), to enforce an appropriate range of the sanctions outlined in Assumption (3). As an international body, presumably functioning under U.N. auspices, an ISMA would have no power to invoke sanctions on its own. Instead, it would, like the U.N., rely heavily on the power of public opinion in democracies, and the influence of diplomatic opinion.

Function3: To reinforce the existing self-interest of parties to arms control agreements in complying with them.

Provided that an ISMA's assessment of violation, or non-violation, is accepted as impartial, the existence of such an organization should reinforce the assumed self-interest of parties to arms control agreements in observing

them, outlined in Assumption (5). An ISMA is expected by its proponents to make it even more in a state's national self-interest to comply with agreements. It will provide additional, more convincing (because it is impartial) evidence of compliance. It will also make it less profitable to attempt marginal, or risk accidental, violations. An ISMA will provide more credible, (because it is both disinterested and complementary) evidence of such violations other than those provided by NTM. In the unlikely event (unlikely, that is, according to Assumption [5]) of a party to arms control agreements pursuing a policy of controlled violations, an ISMA would increase the chances of its early detection. It would also increase the credibility of charges that controlled violations had occurred, contributing to ISMA's Function (2), above.

Each of these three ISMA functions is dependent on the five assumptions embodied in the simple model of verification and arms control. These assumptions are embodied in arms control literature especially that of recent years, and in popular thinking. Unfortunately, as the next chapter explains, these assumptions of arms control theory have been called into question by the last twenty-six years experience of arms control (1958-84). Accordingly, the contributions an ISMA could make to verification and compliance in practice, as opposed to theory, will now be examined.

Notes

[1]See Dan Caldwell, "Verification and SALT: A Bibliographic Essay," in William Potter, ed., Verification and SALT (Boulder, Colo.: Westview Press, 1980), pp. 229-235; and U.S. Representative Les Aspin's concept of adequacy in "Verification of the SALT II Agreement," Scientific American, Vol. 240, February 1979, pp. 38-45.

[2]See Chapter 1, especially footnote 8, above. Of the works listed in the comprehensive but selective Bibliography, relatively few question this conventional wisdom. An adequate explanation of why such an incorrect view has prevailed for so long among so many has yet to be advanced. It may arise from three misperceptions: (a) the intuitive belief that NTM photographs cannot lie, so that (b) arms control agreements can be verified, and compliance enforced with them, so that (c) effective arms control will be possible. The wish for arms control to succeed may have become father to the thought that satellite (principally photographic) reconnaissance can make arms control agreements work.

[3]These assumptions pervade most of the works cited in the Bibliography. As the quotations from Myrdal's 1974 article cited in Chapter 1, footnote 2, indicate, these assumptions are essential to her arguments for an ISMA. On the other hand, there does not appear to have been any attempt to fully articulate these five assumptions and their inter-relationship as is done here.

CHAPTER 4

An ISMA's Contribution to Verification: Some Practical Problems

The ISMA proposal is for a new type of verification organization, utilizing established satellite surveillance technologies. It will not, therefore, be able to avoid the difficulties known, from the open literature, to have been encountered by Western, primarily U.S., verification machinery.[1] Indeed, these difficulties are likely to be greater for an ISMA, even though it may be able to learn from Western experience. Its technical data gathering capabilities will be less than those of U.S. NTM, its interpretation capabilities much less, and its organizational problems much greater. These problems need to be understood if the obstacles to an effective compliance policy for Western democracies are to be understood, since they are also ones which an ISMA appears likely to encounter.

The following analysis concentrates on the experience of democracies with verification and compliance for four obvious, but frequently overlooked, reasons. First, neither the Soviet Union nor any of its allies has ever released any meaningful public information on their experience with verifying arms control agreements. Hence the unavoidable reliance in this study on information concerning the Western

(mainly U.S.) experience. This is probably because, second, the Soviets have no real problems with verification vis-à-vis the U.S. and her democratic allies. The open nature of U.S. society means that the Soviets can, essentially, verify U.S. compliance with arms control agreements by subscribing to the appropriate newspapers, journals and U.S. Government Printing Office (USGPO) publications, including Senate and Congressional Hearings.[2] A qualification is that there are almost certainly some highly technical, classified aspects of U.S. compliance where Soviet NTM are needed to verify compliance. This conclusion is strengthened by the detailed evidence available on the ease with which the three pre-World War II closed societies -- Germany, Italy and Japan -- were able to verify American and British (plus French) compliance with the interwar naval arms limitation agreements.[3] Third, the asymmetry between open societies (like the Western democracies) and closed societies (like the Soviet Union and the three World War II Axis powers) means that their verification requirements are asymmetrical. It is primarily open societies that have difficulty in verifying compliance by closed societies with arms control agreements. Fourth, these asymmetries in verification requirements are reflected in, and reinforced by, asymmetries in compliance policy. This poses problems for open societies' compliance policies that closed societies do not face.

These four potential problems with verification were clearly recognized in some of the early literature of arms control theory. More recently, the practical problems of verification have been examined in an exhaustive, and pioneering, Canadian study.[4] In 1984, the U.S. experience was summarized by the President's January 23 Report on Soviet Non-Compliance and by the Department of Defense's third, April, report on Soviet Military Power. Their main findings were the following.

The seven cases militarily analyzed fell into two groups. In the first group, the U.S. had determined that the Soviets had clearly violated their legal obligations and political commitments under four arms control agreements. These were the 1925 Geneva Protocol, the 1972 Biological Weapons Conventions (BWC), the 1975 Helsinki Final Act, and two provisions of the 1979 SALT II Treaty. In the second group, the U.S. had determined probable Soviet violations of three arms control agreements: the 1972 ABM Treaty, almost certainly; two further provisions of SALT II, probably; and the 1974 Treshold Test Ban Treaty (TTBT), likely.

The two main findings on the nature of these violations were, first, the considerable legal uncertainties and ambiguities of Soviet obligations under these agreements. These made it necessary for the Report to refer, explicitly, to both Soviet legal obligations and political commitments

under these to determine the extent of Soviet violations and noncompliance. The second finding was implicit. This was that U.S. NTM of verification experienced difficulties in identifying and characterizing Soviet activities constituting potential violations or noncompliance. This process required both technical and political judgments on complex issues. These judgments were clearly probabilities rather than certainties on the second group of violations. The DOD Report reinforced this point: "Although the data are ... somewhat ambiguous, it is likely that the Soviets have violated the TTBT ... and may have deployed some SS-16 missiles in violation of SALT II." It added that "other compliance concerns are being studied,"[5] indicating that further evidence of possible violations have been detected by U.S. NTM of verification.

Overall, the key conclusion was the extent of the uncertainties and ambiguities involved in verification even by the most sophisticated NTM available, those of the U.S. These were much greater than is usually supposed.

The five basic assumptions in the simple model of verification and compliance outlined in Chapter 2 therefore need re-evaluation in the light of experience. In the following analysis, the most relevant available examples of the verification and compliance experience to date will be given. Because of the importance of giving a reasonably comprehensive set of comparative examples, it has been

necessary to summarize some extremely complex issues, on some of which analysts differ sharply. It is therefore important to stress that these summaries are based on the sources cited, both specifically and in the attached bibliography. This is particularly true where the conclusions reached might appear to be at variance with widely held assumptions in much of the arms control literature, and in the public debate. These assumptions were probably never wholly valid, but now appear largely invalid in the light of more recently available evidence.

To explain why this is so, each of the five hypotheses in the simple model of verification and compliance will be tested against the available relevant experience, and modified as necessary. The ability of an ISMA to perform its three functions will then be evaluated in the light of these findings.

Practical Modifications to the Theoretical Model of Verification: Some SALT Examples

The first two assumptions of the model are interrelated and so need to be considered together. They are:

> Assumption 1: Adequate verification capabilities should provide conclusive evidence of militarily significant violations, or non-compliance, should these occur.

Assumption 2: Arms control agreements are sufficiently clear not to permit violations of, or non-compliance with, their identified and defined limitations.

A violation of an agreement can only be identified if the limitations in it are well defined. Otherwise, even if a particular action is not clearly identified, it may not be possible to clearly identify it as a violation. The practical problems with Assumption (2) need to be considered first to understand the problems created for Assumption (1). They can be illustrated by the SALT I agreement discussed above.

It is usually said that SALT I limited the ICBM deployed by the two superpowers. This is incorrect. It limited their fixed-silo ICBM launchers, and then only those specifically identified in the agreement. Indeed, the Agreed Statement A, defining such launchers, was not legally binding on the Soviets. Furthermore, as the Interim Freeze was to last only five years (1972-77), its current legal status is unclear. The situation on Soviet compliance or non-compliance with, or violation of, SALT I is thus extraordinarily ambiguous. It appears probable that Soviet missile (ICBM) deployment exceeded the launcher limit of 1,618 by a significant margin. It also appears probable that Soviet deployment of ICBM launchers exceeded this

limit. This is especially true considering that the U.S. had tested a form of austere ICBM launchers using a jeep.[6]

What is not clear is the extent to which Soviet deployment above the 1,618 fixed-silo ICBM launchers limit constituted violations, as distinct from non-compliance. The only clear-cut violation would be their probable deployment of SS-16 mobile ICBM launchers, initially to a level of about 60, rising, at present, to perhaps 180-200.[7] The military significance of this, and other Soviet ICBM deployment above the 1,618 limit, remains a subject for debate.

Thus, even apparently clear definitions and limitations in arms control agreements will almost always contain significant ambiguities. These enable a state wishing to evade their restrictions to interpret them to suit their requirements for evasion. Two other examples underline this point.

In 1974, India exploded a nuclear device.[8] This was regarded by the arms control community as a nuclear weapon test. The Canadian government so interpreted it, cutting off nuclear aid and supplies to India. But the Indian government, both then and subsequently, insisted that the test was of a Peaceful Nuclear Explosive (PNE) device. Under the 1968 Non-Proliferation Treaty, those signatories who had not exploded nuclear weapons promised not to do so, but were allowed to detonate PNE devices. India had, and has, refused to sign the NPT. The question of whether India

had, or had not, violated the 1968 NPT was therefore extremely ambiguous. The Indian government argued, correctly, that India was not bound by the 1968 NPT but that, even if she had accepted it, she was allowed to detonate a PNE. Therefore, in their view, they had not legally violated either the letter of the NPT or their bilateral undertakings with nuclear material suppliers, including Canada, not to use these supplies to manufacture nuclear weapons. The Canadian government reached the opposite conclusion, as did the then U.S. Administration. There was no ambiguity about the Indian nuclear explosion, but much ambiguity about whether it would have broken the letter of the NPT, had India accepted it, or the spirit of the NPT.

A more recent example of the sort of unavoidable ambiguity arms control agreements contain was that of the 1972 Biological Warfare (BW) Convention.[9] Canada had played a significant role in negotiating this and had helped ensure that it contained unusually far-reaching and apparently clear arms control limitations. The BW Convention prohibited the manufacture, stockpiling and use of BW. Seven years after the Soviet Union ratified it, U.S. NTM identified an incident in the Soviet city of Sverdlovsk that appeared to be a major accident at a Soviet BW manufacturing plant. Considerable civilian casualties seemed to have resulted, followed by a major Soviet de-contamination effort to clean up the area. Yet,

thanks to the ambiguity of the 1972 BW Convention, the Soviets could legally claim not to have violated its letter, even if the Sverdlovsk incident were proved to be a release of BW. The Soviet loophole, which they have yet to use, would be that the BW Convention permits research into BW and that the Sverdlovsk facility was a large-scale research center. While the West might claim this violated the spirit of the arms control agreement, they could not prove it violated the letter of the law.

Assumption (2) is thus disproved by experience. It was taken first in order to emphasize how difficult it is for verification capabilities to work as required by Assumption (1). In general terms, this is based on the idea that NTM, especially reconnaissance satellites, can identify, largely by photographs, activities that can be easily and clearly characterized. That is, NTMs can identify potential violations, and define them so clearly that they can be characterized as either violations of arms control agreements or as compliance. If they are violations, NTM, mainly satellites, can, the lay publics believe, also identify the extent of the violations, e.g., by 5%, 10%, 15% et seq. Underlying this view is their belief that photographs cannot lie.

Unfortunately, this belief is incorrect. For verification purposes, it can be said that reconnaissance satellite photographs always lie until they are inter-

preted. More precisely, photographic data is useless until interpreted by Photo Interpreters (PI).[10] Moreover, data can only be interpreted if the interpreters have an extremely detailed knowledge of the weapons systems whose changing characteristics they are trying to identify. Probably the best example of the difference between photographic reconnaissance capabilities in theory and practice is that from the 1962 Cuban Missile Crisis.

To the lay public, the U.S. photographs of Soviet missile installations being constructed in Cuba in September/October 1962 provided overwhelming evidence that the Soviets were trying to deploy missiles (SS-4/-5 M/IRBM) in Cuba. Hence the overwhelming U.S. public support for President Kennedy's firm action to get the Soviets to cease these activities, which they did. Three observations are in order. First, many of these photographs were not from satellites, but from high- and low-flying reconnaissance aircraft. Second, the initial photographs of Soviet construction, on which President Kennedy based his actions, were meaningless without interpretation. The Photo-Interpreter (PI) who briefed the President, Mr. Arthur Lundahl, founded the Central Intelligence Agency's (CIA) National Photo Interpretation Center. As he recently put it, "I had to interpret them for him. It's always necessary, because the layman isn't used to looking at things in the vertical. When you look down on a map, that's quite

different from looking at things horizontally."[11] He later learned that the President had been unable to identify the missiles in the photograph and also had difficulty in understanding the difference between occupied and unoccupied missile sites.[12] Many of the Soviet M/IRBM sites were unoccupied but would be loaded with missiles when necessary.[13] Third, to identify and characterize accurately the Soviet constructions in Cuba, the U.S. PIs and the intelligence community had to do the following: identify the new construction; characterize it; compare it to other Soviet construction it resembled (M/IRBM sites in the Soviet Union); and make a judgment as to what it represented. Moreover, given the extremely serious consequences of making a judgment that the Soviets were building M/IRBM bases in Cuba, it was reached only with great difficulty. It clearly required access to the most sensitive intelligence data, from all available sources. Much of this data would certainly be of the kind that neither the U.S. (nor any other Western state) shares, even with her closest allies. The Soviets, of course, hold such information extremely tightly, even within their own country. They would certainly not share it with an ISMA. Third World countries would also hold such data closely and be reluctant to share it with an ISMA.

Potential Difficulties An ISMA
Could Experience

The general implications for an ISMA in light of these particular difficulties encountered by U.S. NTM of verification are significant. These difficulties suggest that an ISMA will find it difficult to verify, adequately, compliance with agreements for arms control or crisis management.

An ISMA seems likely to encounter four main problems in collecting and interpreting evidence of compliance or non-compliance with such agreements. The first will be the problem of time. An ISMA may not detect evidence of activities constituting potential violations, or non-compliance, even if they occur. Or it may not do so for some time, possibly not for some years, after they start.

The second problem will be that of technical interpretation. When an ISMA does detect evidence of such activities, this will have to be interpreted. But both the evidence, and the interpretation of it, are likely to be much more ambiguous, and much less certain, than is often suggested in the literature on verification.

The third problem will be that of technical interpretation and political judgment. Both will be needed to assess whether potential violations or non-compliance are militarily significant. Militarily, they may be judged to be of

low, medium, or high significance. Politically, a judgment must be made as to whether their military significance is great enough to warrant raising them with the violator. Initially, this is likely to be done privately, judging by past experience, but may eventually have to be done publicly, a particularly difficult judgment.

The fourth problem will be one of legal interpretation and political judgement. Interpretation and judgement will be required to determine whether violations of, or non-compliance with, arms control or crisis management agreements have occurred. Legally, such agreements are likely to contain considerable ambiguities, even if drafted as precisely as possible. This has not always been the case in the past. There are therefore likely to be considerable uncertainties as to whether particular activities constitute clear-cut legal violations or fall into the more ambiguous category of non-compliance. Resolving these uncertainties will require, besides legal interpretations, political judgments. This will be particularly true when the potential violation or non-compliance is of what one (or more) of the parties to an agreement regards as its spirit, or a political, rather than legal, commitment.

Dealing with these four problems will require an ISMA's staff to make very difficult and complex technical and political judgments. The extent to which these problems have been experienced even by the highly developed U.S.

verification machinery is, as has already been noted, much greater than is often supposed. To emphasize this point, the next chapter considers two further examples of the limitations of U.S. NTM. These are, it should be remembered, technically more capable than an ISMA is likely to be.

Notes

[1]The Reagan Administration's re-evaluation of U.S. verification policy was intensified in 1983-84 and has led to the leakage of much information. There are too many articles to cite individually, but they confirm the problems indicated by the following sources cited, for ease of reference, from Caldwell's bibliographic essay in Potter, Verification and SALT (Chapter 3, Footnote 1, above): Harvey A. DeWeerd, "Verifying the SALT Agreements: Must It Be By Faith Alone?" Army, Vol. 28, August 1978, pp. 15-18; Jake Garn, "The SALT II Verification Myth," Strategic Review, Vol. 10, No. 3, Summer 1979, pp. 16-24; Amron H. Katz, Verification and SALT, the State of the Art and the Art of the State (Washington: The Heritage Foundation, 1979); David S. Sullivan, "The Legacy of SALT I: Soviet Deception and U.S. Retreat," Strategic Review, Vol. 7, No. 1, Winter 1979, pp. 26-41. See also the President's Report on Non-Compliance, cited above in Chapter 2, footnote 4.

[2]This is self-evident, and was accepted as such in the formative literature of arms control, including its four bibles: Brennan, Bull, Lefever and Schelling and Halperin. To underline this point, the question only need be asked: How long could any U.S. Administration hope to keep secret the kind of non-compliance policy practiced by the Soviet Union? The answer would appear to be not for long, judging by the regularity with which selective, if not totally accurate, leaks of sensitive information to the media occur in the U.S. Much of the American media is favorably disposed towards arms control agreements, and would therefore be particularly aggressive in ferretting out any evidence of potential U.S. non-compliance with arms control agreements.

[3]These are summarized in the sources cited in the Bibliography, especially Donald McLachlan, Room 39: A Study in Naval Intelligence (New York: Atheneum Publishers, 1968), and Stephen Roskill, Naval Policy Between the Wars, Vol. I. The Period of Anglo-American Antagonism 1919-1929, Vol. II. The Period of Reluctant Rearmament 1930-1939 (Annapolis, Md.: Naval Institute Press, 1976), plus the four articles by Richard Dean Burns: "Inspection of the Mandates, 1919-1941," Pacific Historical Review, Vol. 37, November 1968, pp. 445-462; "International Arms Inspection Policies Between World Wars, 1919-1934," Historian, Vol. 31, August 1969, pp. 583-603; "Origins of the United States' Inspection Policy: 1926-1946," Disarmament and Arms Control, Vol. 2, Spring 1964, pp. 157-169; "Supervision, Control and Inspection of Armaments: 1919-1941 Perspective," Orbis, Vol. 15, Fall 1971, pp. 943-952.

[4]G.R. Lindsey, Research on War and Strategy in the Canadian Department of National Defence (Ottawa: Operational Research and Analysis Establishment, September 1983).

[5]U.S. Department of Defense, Soviet Military Power (Washington, D.C.: GPO, April 1984), p. 117.

[6]William R. Van Cleave, Military Implications of the Treaty on the Limitation of Strategic Offensive Arms and Protocol Thereto (SALT II Treaty), Hearings before the U.S. Senate, Committee on Armed Services, October 9-16, 1980, pp. 1116-1252.

[7]Chronologically, these were: Jack Anderson, "Missile Freeze Is Brezhnev's April Fool's Joke," Washington Post, April 1, 1982, p. B-21.; Niles Latham, "Soviet Secret Weapon Threatens U.S.," New York Post, April 3, 1982; Roland Evans and Robert Novak, "Soviet Freeze Warning," Washington Post, April 5, 1982; Henry Trewhitt, "Soviets Said to Deploy Long-Range Missile," Baltimore Sun, April 6, 1982; Michael Getler, "Government Experts Challenge Reports of Soviet SALT Violations," Washington Post, April 9, 1982; Andrew Cockburn, "Treat SS-16 Warnings Warily," New York Times, April 27, 1982; Daniel Southerland, "Are Soviets Violating SALT II Guidelines?" Christian Science Monitor, May 12, 1982; William Beecher, "Soviet Missiles Stir Concern," Boston Globe, May 28, 1982; Jeffrey St. John, "Soviet Arms Violations Alleged," Washington Times, June 7, 1982; Niles Latham, "USSR Violates SALT with Secret Missile," June 14, 1928; Navy Times, "Soviet SS-18 Warheads May Exceed Limit," June 24, 1982; Aviation Week and Space Technology, "Cautious Start," June 28, 1982; Jeffrey St. John, "A Senator's Challenge Pursuant on SALT II," Washington Times, July 12, 1982; Niles Latham, "Space Spies Bare Red Nuke Scam," New York Post, August 18, 1982; John Lufton, "Reagan Spends Less Than

Carter on Arms," Washington Times, September 8, 1982; Washington Times, "SALT Violations, Continued," September 8, 1982; Soviets Aerospace, "Soviets May Be Preparing to Deploy Mobile SS-16 ICBM," December 6, 1982, p. 93. See also Strategic Survey 1983-1984 (London: International Institute for Strategic Studies, 1984), p. 24.

[8]See Ashok Kapur, India's Nuclear Option: Atomic Diplomacy and Decision Making (New York: Praeger, 1976) and Robin Ranger, Arms and Politics 1958-1978: Arms Control in a Changing Political Context (Toronto: Gage, 1979), pp. 131-140.

[9]See Ranger, The Canadian Contribution to the Control of Chemical and Biological Warfare (Wellesley Paper No. 5, Toronto: Canadian Institute of International Affairs, 1976).

[10]See the works by Amron Katz cited in the Bibliography. Katz had a distinguished career as a Photo-Interpreter with the U.S. Air Force, was subsequently with the Rand Corporation, and was Director of the Verification and Analysis Bureau, U.S. Arms Control and Disarmament Agency, 1973-76.

[11]Jack Anderson, "Getting the Big Picture for the CIA," Washington Post, November 28, 1982.

[12]Ibid.

[13]Ibid. Anderson quotes Lundahl as saying: "Kennedy had a little problem understanding the difference between occupied and unoccupied positions. ... In missilery, you can survey a position, see how it's equipped logistically and see what's nearby and no missile is there. But when the whistle blows, they can wheel it in ... ready to go."

CHAPTER 5

Two Case Studies on the Limitations of Verification by Reconnaissance Satellites: Possible Soviet Mobile ICBM Deployment and the SALT Agreement

Two examples serve to demonstrate the point that reconnaissance satellites may have great difficulty in providing clear-cut evidence of militarily significant, clear violations. This is partly because the Soviets have avoided taking actions that can be identified by U.S. reconnaissance satellites and other NTM of verification as clear-cut, continuing violations of the legally binding parts of the SALT agreements. To adopt Amron Katz's phrase, U.S. finders have not been able to cope too well with intelligent Soviet hiders.

If an ISMA is to assist in the verification of superpower compliance with arms control agreements, it, too, will have to try to cope with intelligent Soviet hiders. If it is to assist in the verification of multilateral arms control agreements, it will also have to cope with other states playing hiders, such as those trying to become, clandestinely, new nuclear weapons powers. An ISMA will not need to cope with Western hiders, because neither the U.S. nor her democratic allies are able to play at being hiders, that is, at not complying with arms control agreements.

Of the two examples, the first, the probable Soviet deployment of SS-16 mobile ICBM, has been chosen as an individual case study in verification where unusual detail is available in the open literature. The second, the potential Soviet non-compliance with the terms of SALT I and II, discussed below, is the most important instance of the limitations of satellite reconnaissance, both photographic and electronic, in verifying compliance with arms control agreements. Both these examples of superpower arms control agreements involve apparent Soviet non-compliance with their terms. Examples of verification problems involving other powers will be given later, in addition to the Indian nuclear explosion already cited.

The issue of possible Soviet deployment of SS-16 mobile ICBMs emerged, in the open literature, as a major issue in 1982. The Assistant Secretary of Defense for International Security Policy, Richard N. Perle, stated that there "...is considerable evidence that there is activity associated with the SS-16s that could well have been a violation of the understanding not to deploy the SS-16."[1] Probable SS-16 deployment has now been officially confirmed, precise numbers being withheld.

From the viewpoint of this study, it is the limitations on the U.S. NTM of verification that are important, because an ISMA is likely to experience even greater limitations. These limitations are both technical and political. The

time taken to collect and interpret evidence is also an important limitation. It takes much longer than is often realized to gather evidence of potential violations of arms control agreements, interpret them, and reach a judgment on their significance.

The SS-16 case has four relevant features. First, U.S. NTM apparently detected SS-16 testing over a decade ago, but took a long time to identify probable deployment and its level. Even now, there appears to be continuing debate within the U.S. government over the interpretations of the evidence of SS-16 deployment. The current Administration has determined that this has occurred, but this is a political, as well as a technical judgment.

Second, making such a judgment that violation of an arms control agreement has occurred is politically risky. Externally, it will make relations with the potential violators in this case the Soviet Union, difficult, or even more difficult. Internally, it will attract criticism from supporters of arms control. They may be reluctant to accept evidence of violations or non-compliance. They may also fear that suggesting that this has occurred will create more problems for the arms control process than are justified by the military significance of the potential violations in question. Significantly, this, too, is a political judgment as well as a technical one.

Third, the legal consequences of the probable Soviet SS-16 deployment are ambiguous. As the President's Report notes, it would constitute a probable violation of their legal obligation not to defeat the purposes of SALT II while it was pending ratification prior to 1981. But, since SALT II was not ratified by the U.S., the Soviets would, from 1981 onwards, be in a probable violation of their political commitment to observe its terms.

Fourth, making public the evidence of Soviet SS-16 deployment has meant releasing some information, if only implicitly, about U.S. satellite reconnaissance capabilities. This could compromise their future usefulness, and is why the U.S. has always been reluctant to release such information. Such reluctance may, as the noted conservative nuclear physicist Dr. Edward Teller has observed, be misplaced.[2] But it has been a position strongly held by all administrations since reconnaissance satellites were deployed, and one tenaciously held by the civilian and military bureaucracies involved in the intelligence communities.

The available evidence suggesting Soviet SS-16 deployment in violation of SALT II is chronologically as follows:[3]

(1) In SALT I, the U.S. sought a ban on all mobile ICBM, but the Soviets rejected this. Since the Soviets also insisted that they could do anything with their strategic forces that was not specifically, prohibited

in SALT I, this suggested that they wished to keep open an option to deploy a mobile ICBM.

(2) From about 1973 onwards, U.S. NTM had detected Soviet testing of the SS-16 mobile ICBM. This was a three-stage, single or multiple warhead missile which became, with the removal of the third stage, the SS-20 Variable/Intermediate Range Ballistic Missile (V/IRBM). The SS-20 came in three modifications, with 1 or 3 warheads, and was deployed from 1977 onwards.[4] Both the SS-16 and SS-20 use a mobile launcher (possibly a common launcher), which could be reloaded. The Soviet development of a dual-purpose ICBM/IRBM system was original and presumably intended to be economical. But when the SS-16 ICBM version of the system appeared, for reasons that are unclear, it experienced considerable operational difficulties. Reportedly, a total of 32 SS-16s were test fired from the Soviet test site on Plesetsk, with five failures, the last about 1977 or 1979.[5] A limited number of SS-16s were deployed at Plesetsk, the precise figure being uncertain, but reportedly ranging from 24 through 36 to about 60.[6] To avoid upsetting the SALT negotiations, successive U.S. Administrations chose not to count these SS-16s in the Soviet SALT I and II ICBM totals, although they were SALT countable.

(3) In the SALT II negotiations, especially those under President Carter from 1977-1979, the U.S. sought a long-term ban on all mobile ICBMs. This was rejected by the

Soviets, who agreed to only a short-term ban on mobile ICBM in the Protocol of SALT II, which was to run for three years from the conclusion of the SALT II agreement. As eventually defined, this was until December 31, 1981. The SALT II agreement was signed on June 18, 1979, but not ratified by the U.S. for various reasons, including the Soviets' December 26, 1979 invasion of Afghanistan.

(4) Nonetheless, both superpowers issued unilateral statements that they would abide by the terms of SALT II for an unspecified, but limited, time. Subsequently, the Soviets clarified their position as being that they were not legally obliged to observe the terms of SALT II, but might choose to do so. As of early 1984, they were in probable violation, although not irreversible violation, of the main quantitative limits of SALT II. The Soviets had some 2,550 Strategic Nuclear Delivery Vehicle Launchers (SDVL), instead of the 2,250 SDVL allowed after December 31, 1981. They also appeared to be close to or over the sublimit of 1,320 MIRVed SDL. These included some 936 SLBM in 62 SSBN counted under SALT II, of which 264 were MIRVed SLBM in 16 SSBN. They also had 30 SLBM in 8 SSBN/SSB, of which the missiles, but not the submarines, were SALT-counted, plus 45 SLBM in 15 diesel submarines (SSB) not counted under SALT.[7]

(5) Starting in April, 1982, reports began appearing in U.S. newspapers and journals that the U.S. intelligence community had, after an extensive and intense debate, con-

cluded that the Soviets had deployed between 160 and 200 SS-16 at Plesetsk. These reports were confirmed in their essential finding of probable SS-16 deployment by the subsequent official U.S. statements described above. From the viewpoint of this study, the details given, although varying, and yet to be confirmed, are of interest. They reinforce the basic point that it is one thing for U.S. NTM, or an ISMA's verification machinery, to detect potential violations, like SS-16 deployment. Even this is difficult. It is another thing to quantify such violations, let alone to do so with sufficient certainty to identify a clear violation, to determine its military significance, and to raise a question of non-compliance in public.

The details were reportedly that:

(a) The Soviets had initially built two sets of 11-bay garages, each set housing one regiment of 12 SS-16 mobile launchers. This would give a total of 24 SS-16 launchers.[8]

(b) In 1977, the Soviets completed support buildings (number unspecified) each able to house three regiments of 12 SS-16 mobile launchers, a total of 36 launchers each.[9]

(c) The total number of mobile launchers would thus be at least 60 (24 + 36), if only one support building were completed.[10] More than one such building would have had to be constructed to give the suggested total deployment of 180-200 SS-16 missiles.[11]

(d) U.S. NTM are also said to have identified at least 43, and as many as 100, launch sites or launchers.[12] With one reload SS-16 per launcher, this would give 200 SS-16 missiles deployed.

(6) Technically, the details of the SS-16 and SS-20 systems appear to be as follows:[13]

(a) Both missiles are housed in metal cannisters from which they are fired. No SS-20 has been seen (presumably photographed) outside the cannisters. (This may, or may not, be a correct statement.)[14]

(b) Both SS-16 and SS-20 missile cannisters are mounted on a mobile launch vehicle, possibly common to both systems.

(c) More than one missile was intended to be normally deployed per launch vehicle for the SS-20. At present, the Soviets appear to be working towards a goal of one reload per SS-20 launcher, but may plan a higher final ratio of reloads for the completed SS-20 force. The SS-20 is deployed in a reload mode.

(d) The difference in external characteristics between the SS-16 and SS-20 missiles is minimal. They do not have what SALT II referred to as Functionally Related (Externally) Observable Differences (FROD). The third stage, converting the S-20 to the SS-16, is reported to be some 10 feet long.[15]

For the purposes of this study, it is relevant that U.S. NTM have been able to identify a potential breach of SALT II that is militarily significant, but not to characterize it too accurately and promptly. Using the most advanced available photographic and electronic intelligence gathering and interpretive machinery, with the most highly qualified personnel, the U.S. has only been able to establish that the Soviets are engaged in a probable violation of SALT II. It is also important to note that, if it had occurred, Soviet SS-16 deployment would have been a violation of SALT II, had it been ratified. The current Soviet position is that they are not legally obliged to observe SALT II, but may choose to observe some of its provisions for an undetermined length of time.[16]

This leads to one of the most important conclusions about verification capabilities and compliance policy. For democratic societies, verification capabilities, like those of an ISMA, must produce not just evidence, but overwhelming evidence, of violations of arms control agreements before the violators can be challenged publicly. Effectively, verification capabilities must produce evidence of violations comparable to that which would, in the U.S. judicial system, be sufficient to produce a Bill of Indictment from a Grand Jury. This is a finding (a Bill) by an independent jury that the evidence presented by the prosecution is sufficient to charge (indict) the offenders. They will then

have to stand trial. The reason democratic societies require such a high standard of proof of probable violations of arms control agreements is that their electorates are disposed to believe that arms control is desirable and achievable. They are therefore extremely reluctant to accept that their partner in a bilateral arms control agreement, or some parties to a multilateral agreement, are violating them.

That this is a consistent pattern of behavior will emerge from the subsequent analysis, especially that of the inter-war naval arms limitation agreements. But the point needs making here, in the context of a discussion of existing U.S. verification capabilities and those an ISMA must have. The SS-16 issue illustrates, particularly clearly, the inability of U.S. NTM to function as required in Assumptions (1) and (2) of the simple model of verification and compliance. It is important to note that the reasons for this are both technical and political. Technically, U.S. NTM have experienced difficulties in identifying and characterizing Soviet activities quickly enough. Politically, it has been difficult for the U.S. to reach a decision to raise potential Soviet violations in public on the basis of evidence which might not be convincing. Since an ISMA's technical capabilities would probably be less than those of U.S. NTM, it would probably experience even greater difficulties in raising, publicly or privately, questions of potential

violation or non-compliance. This would be particularly true when the interests of democratic societies were involved. Its assurances of compliance would thus tend to lack credibility. This conclusion from a particular case is reinforced by consideration of the much larger class of cases concerning Soviet non-compliance with SALT I and II.

Soviet Non-Compliance with SALT I and II
Including the ABM Treaty

The question of Soviet non-compliance with the 1972 SALT Agreements and the 1979 SALT II Treaty is extremely sensitive, technically and politically. But, as with the SS-16 case, this study does not need to make a judgment as to whether or not the Soviets have violated the letter of the SALT agreements. The question here is whether or not U.S. NTM have been able to establish that the Soviets are, or are not, in compliance with these agreements. The answer is that they have had great difficulty in determining whether the Soviets are in compliance or non-compliance with, or violation of, their legal and political commitments.

As the SALT cases have shown, there is also a crucial difference between what the U.S. and the Western powers, including Canada, understand by compliance, and what the Soviets understand by compliance, with arms control agree-

ments. The West has always thought of compliance as being with the spirit, as well as the letter of arms control agreements. Hence the U.S. reliance, in the SALT agreements, on a complex series of Agreed Interpretations, Common Understandings and Initialled Statements to clarify the key terms. Since the U.S. government regarded, and said it regarded, these clarifications as essential to the success of these agreements, it assumed that they had been accepted by the Soviets.[17] They had not, and were rejected by the Soviets in practice. This was particularly true of SALT I, where twelve years experience is now available, and also seems to be occurring with SALT II, now nearly five years old.

The Soviet position, which is consistent with their general philosophy of law, international and domestic, is that they are bound only to observe the specific limitations contained in specific texts of arms control agreements. They are not -- in their view -- legally bound to observe anything called the spirit of arms control agreements.[8] Nor are they bound by any unilateral U.S. interpretations of these agreements, lacking, as these do, any legally binding quality, unless explicitly accepted by the Soviet government. Although Soviet negotiators appeared, on occasions, to accept such interpretations, their acceptance has never been in a legally binding form. This is also true of their

political commitment to observe the terms of SALT II for an unspecified period.

Hence the need to distinguish between Soviet non-compliance with the SALT agreements and Soviet violation of them.[19] The Soviets have not complied with some of the most important provisions of these agreements as understood and defined by the U.S. during the SALT negotiations. Such non-compliance has been established by U.S. NTM. But it does not legally constitute a violation of the letter of the SALT agreements, even though it violates their spirit. U.S. NTM has also identified a considerable number of cases of apparent Soviet violation of these agreements. But the evidence has not been enough, until recently, to charge the Soviets with violations, or for the U.S. to impose sanctions for non-compliance. Although the U.S. has raised potential violations with the Soviets in the SCC, it has done so only in a formal way. Contrary to its public image, the SCC cannot resolve charges of violation. Instead, it provides only a diplomatic forum in which the U.S. can raise evidence of their violations. The U.S. must then accept the Soviet answer, which is always to deny their violations, or press the issue elsewhere. Again, until recently, the U.S. has chosen to accept the Soviets' claim that they have not violated the SALT agreements, even when such claims have lacked credibility, because the conse-

quences of not doing so would be politically costly.[20] They would also call into question the value of the SALT process.

The SALT experience has thus been that U.S. NTM are adequate to identify and characterize Soviet non-compliance with these agreements. But, because the Soviets have been careful not to accept these crucial limitations in legally binding forms, such non-compliance has not constituted legal violation. Where the Soviets have violated these agreements, they have done so only in carefully controlled ways. Their controlled violations have, it is reasonable to assume, been designed to exploit the technical limitations of the U.S. NTM especially in the political context of an ineffective U.S. compliance policy. Soviet controlled violations are so apparently limited, in their nature, extent and duration, as to make it almost impossible for the U.S. to charge the Soviets with violation, even though the U.S. believes it has occurred. Thus, even though the Soviet violations are militarily significant, the SALT experience with U.S. verification capabilities proves that Assumptions (1) and (2) of the simple model of verification and compliance are incorrect.

Here again, the implications for an ISMA are that it is likely to experience even greater difficulties than the U.S. verification and compliance organizations in dealing with countries adopting the Soviet approach to compliance. This stresses the letter, not the spirit, of agreements, arms

control or otherwise. It also suggests that clear and significant violations are acceptable, if perceived as being in the national interest. The Soviet Union is not the first, and is unlikely to be the last, country to adopt a narrow, constructionist approach to international agreements. It will be difficult for an ISMA to verify their compliance or non-compliance.

Conclusion

Assumptions (1) and (2) in the simple model of verification and compliance thus appear incorrect in two crucial respects. Both suggest that an ISMA's contribution to the verification of arms control would be limited. These are, first, that existing U.S. NTM have very much more limited capabilities than are thought to exist by the general public. This is particularly true of photographic satellite reconnaissance, but also applies to electronic reconnaissance, including the monitoring of telemetry signals for Soviet missile tests.[21] The real world limitations on U.S. NTM derive from two sources. One is the interpretation limitation. Data collected by U.S. NTM is not self-explanatory. On the contrary, it is essentially useless until interpreted. But the interpretation of such data requires large organizations, employing highly skilled interpreters with access, where necessary, to the most sensitive military

information. This has to include data on the U.S. weapons systems being deployed, in development, or to be developed in order to establish possible Soviet weapons performance in the light of U.S. systems. An illustrative example of these limitations given was the need for a Photo Interpreter (PI) to interpret the photographic reconnaissance data of the Soviets' 1962 M/IRBM deployment in Cuba. The other limitation is the Soviet ability to engage in deception designed to spoof U.S. NTM, in accordance with the policy of practicing deceptive measures (maskirova, "camouflage") whenever possible. As Amron Katz put it when U.S. reconnaissance satellites were just being deployed, it is always easier to be a (Soviet) hider than a (U.S.) seeker.[22] This has become more, rather than less, true as the Soviets have acquired an increasing knowledge of U.S. NTM capabilities, plus an increasing ability to prevent these from finding what they want to hide. The illustrative example given of the difficulties U.S. NTM had in identifying and characterizing a particular Soviet weapons system was the probable Soviet deployment of SS-16 mobile ICBM. U.S. NTM had been able to identify Soviet deployment, but took many years to confirm it.

These difficulties experienced by the U.S. NTM attempting to verify Soviet compliance would be faced by an ISMA vis-à-vis the Soviets, plus other countries adopting a competitive approach to arms control agreements. Countries wishing to

play hiders to the ISMA finders would be likely to include, for example, those wishing to acquire nuclear weapons despite the 1968 Non-Proliferation Treaty (NPT).

The second respect in which Assumptions (1) and (2) were incorrect was the assumption that limitations on arms control agreements were well defined so that a particular Soviet military activity identified by U.S. NTM could be clearly characterized as constituting compliance or violation. In practice, arms control agreements have been proven to be extraordinarily ambiguous for two reasons. One is that the Soviets have adopted an extremely narrow, formalistic interpretation of them, insisting that they can only be bound to observe the letter of specific restraints embodied in the text of arms control agreements. They reject any concept of observing the spirit of such agreements, as well as any U.S. attempts to clarify this spirit by making unilateral American interpretations binding on the Soviets. The other is that the remaining text of arms control agreements have, as a result, proved extraordinarily ambiguous, for technical and legal reasons. Technically, limitations on complex weapons systems cannot be embodied in legal language free from ambiguity. But, legally, any ambiguous agreement must be subject to interpretation by the parties to it. And the Soviets have been able to interpret ambiguous arms control agreements in ways which prevent the U.S. from charging them with legal viola-

tion. Hence the use, here, of the broader term "non-compliance" to describe the Soviet policy towards arms control agreements. Hence also the U.S. Administration's distinctions between violations of, and non-compliance with, legal obligations and political commitments. The illustrative example given of the Soviet policy of non-compliance with and controlled violations of arms control agreements, was that of the SALT I and II agreements, including the 1972 ABM Treaty.

Accordingly, Assumptions (1) and (2) need reformulating in the light of experience, as follows:

> Reformulated Assumption 1: U.S. NTM have proved only moderately successful in identifying Soviet actions that could constitute potential violations of arms control agreements. They have been less successful in characterizing Soviet activities with the accuracy needed to identify actual violations. This is because of:
>
> Reformulated Assumption 2: The limitations contained in arms control agreements have been so imprecise as to make it extremely difficult for the U.S. to define Soviet actions as clear-cut violations of these agreements.

Reformulated Assumptions (1) and (2) clearly mean that an ISMA would have much greater difficulty in contributing

to the verification of arms control agreements than it appears at first sight. An ISMA's photographic reconnaissance capabilities would be considerably less than those of U.S. NTMs, although useful. Its ELINT and SIGINT gathering capabilities appear likely to be very limited indeed. More importantly, an ISMA's ability to interpret the reconnaissance data it can gather will be minimal, for verification purposes, because it will lack access to the highly classified, extremely sensitive, but essential, information on superpower weapons systems. The Soviets would clearly not release any information about their weapons systems to an ISMA, given their policy of total secrecy. This would preclude the U.S. from releasing such information, especially since this would further compromise U.S. NTM. Given these unavoidable political limitations on an ISMA's ability to gather and interpret data, it would seem unlikely to be able to identify, and certainly not to characterize as violations, activities representing noncompliance with, or controlled violations of, arms control agreements. The most important of these would be Soviet activities. Since the U.S. over-complies with these agreements, an ISMA would have no difficulty in verifying U.S. compliance, but would not really need satellite reconnaissance to do so. A suitable press subscription service would almost suffice. But, where multilateral arms control agreements are involved, like the 1972 Biological Warfare

Convention, an ISMA would experience problems similar to those encountered by the U.S. with the Soviet Union and with any other countries following policies of non-compliance with and/or controlled violations of, arms control agreements.

Having established the differences between satellites and NTM verification capabilities in theory and practice, the other half of the verification/compliance equation can now be addressed: compliance policy.

Notes

[1]Quoted in Soviet Aerospace, p. 93 (cited in chapter 4, footnote 7).

[2]Dr. Teller's observation must be given great weight, since it was he who made the theoretical breakthrough that enabled the U.S. to build "fission-fusion-fission" weapons (hydrogen bombs) and he has been a pioneer in nuclear and thermonuclear weapons technology for over forty years.

[3]See Chapter 4, footnote 7.

[4]According to The Military Balance 1982-1983, p. 113, which contains considerable new information on Soviet nuclear forces, the SS-20 had the following characteristics: first deployed, 1977, Mod. 1: Range - 5,000 km, Circular Error Probable (CEP) - n.a., est. max. warhead yield - 1x1.5 megatons; Mod. 2: Range - 5,000 km, CEP - 400 m, est. max. warhead yield - 3x150 Kilotons (Kt.) MIRV; Mod 3: Range - 7,400 km, CEP - n.a., est. max. warhead yield - 1x50 Kt.

Each SS-20 launcher carries one SS-20 missile, with one reload SS-20 missile normally available. The IISS suggested that "A possible 37 complexes -- average 9 launchers (333 msls) -- is believed to be planned." This now appears to be an underestimate, as the latest figure for SS-20 deployment in the open literature was 451 launchers and 702 missiles in March 1984. The Military Balance, 1982-83 (London, International Institute for Strategic Studies, September 1983, p. 13). Figures are for July 1982. Evans and Novak (Wash-

ington Post, April 5) claim the SS-16 has "a single one megaton warhead." Cockburn (New York Times, April 27) says "a single 500-kiloton nuclear warhead."

[5]Anderson, April 1 (cited in Chapter 4, footnote 7); Getler (cited in Chapter 4, footnote 7).

[6]The figures given are: "less than two dozen in fixed positions" (Getler, cited in Chapter 4, footnote 7); 3 regiments, each with 12 SS-16, for a total of 36, but currently deployed at Perm, not Pletesk (Latham, April 3, 1982, cited in Chapter 4, footnote 7); "...approximately 60 SS-16s believed to be on hand at Pletesk" during the Carter Administration's SALT II negotiations, where, instead of verified SS-16 destruction, the U.S. settled for them being "put in warehouses there." (Beecher, cited in Chapter 4, footnote 7).

[7]It is important to note that under SALT-counting rules, once any type of missile is tested with MIRVed warheads, all missiles of that type are classed as MIRVed. This rule is required by the inability of U.S. NTM to identify whether individual silos contain MIRVed or un-MIRVed missiles. The Military Balance, 1983-84, pp. 118-123 (cited in footnote 4 above) lists two types of Soviet SLBM as MIRVed: the SS-N-18 and SS-NX-20. All missiles of this type therefore count towards the Soviet allowance of 1,320 MIRVed Strategic Delivery Vehicle Launchers (SDVL). SALT II established four main limitations on superpower SNF:
Limit 1. Overall limit: 2,250 SDVL after January 1, 1981. Current Soviet deployment is over 2,550 SDVL, excluding possible SS-16 deployment.
Limit 2. Subceiling on MIRVed SDV, including strategic bombers carrying cruise missiles with ranges over 600 kilometer ranges: 1,320.
Limit 3. MIRVed ICBM and SLBM subceiling: 1,200.
Limit 4. MIRVed ICBM subceiling: 820, including subceiling on heavy Soviet ICBM launchers: 308, excluding 18 operationably available launchers at the Tyuratam test range. (This subceiling illustrates the definitional problem in arms control agreements. As defined by the U.S. in its interpretations attached to the 1972 SALT I Agreements, Soviet heavy ICBM now deployed are the SS-17, SS-18 and SS-19, a total of over 800. The U.S. then accepted, by 1976, a Soviet redefinition of their heavy ICBM as being only the SS-18. In the SALT II negotiations, the Soviet rejected inclusion of the 18 heavy ICBM launchers at Tyuratam.
The SALT I Limit on SALT-counted SLBM on SALT-defined "modern" SLBM: 950 SLBM in 62 modern SSBN. Current Soviet deployment is over 936 SLBM in 62 modern SSBN. Additionally, the Soviets have 69 (49 nuclear and 20 diesel) sub-

marines (SSGN/SSG) carrying a total of 474 nuclear capable cruise missiles (402 in SSGN, 72 in SSG).

[8]Latham (New York Times, June 14, 1982, cited in Chapter 4, footnote 7).

[9]Ibid.

[10]This figure of 60 SS-16 by 1977 coincides with the "...approximately 60 SS-16s believed to be on hand" during the Carter Administration's 1977-79 SALT II negotiations cited by the usually accurate William Beecher (Boston Globe, cited in chapter 4, footnote 7).

[11]The various figures for current deployment are about 200 SS-16 (Evans and Novak, Chapter 4, footnote 7), and Trewhitt (Chapter 4, footnote 7); 180 SS-16 (Latham, June 14, 1982, cited in Chapter 4, footnote 7); 180 to 200 SS-16 versus 80-90 SS-16s counted by the CIA (St. John, July 12, 1982, cited in chapter 4, footnote 7); the Spring 1982 National Intelligence Estimate (NIE) "cites the judgment of the Defence Intelligence Agency (DIA) that Soviet mobile SS-16 ICBMs are fully operational at the Plestetsk test range. Forty-three launch sites have been identified and there may be as many as 100" (Lefton, Chapter 4, footnote 7); 220 SS-16 (Washington Times (Chapter 4, footnote 7). If one reload missile were available for each launch site, 100 launch sites would generate a force of 200 missiles.

[12]See the range of figures cited in footnote 11 above.

[13]Appears, that is, from the source cited in Chapter 4, footnote 4.

[14]Cockburn (Chapter 4, footnote 7) asserts that the SS-20 "...has never been photographed outside of its cannister and the data on its testing program is thinner than that for other Soviet missiles." Aviation Week and Space Technology, "Washington Roundup," June 28, 1982, asserts that "while large mobile launchers have been sighted at Plesetsk, no SS-16s have been observed on the launchers" (p. 19).

[15]Anderson (Washington Post, cited in Chapter 4, footnote 7).

[16]See New York Times, "Strategic Nuclear Arms: Where Each Side Stands," June 7, 1983.

[17]See U.S. Congress, Senate, Committee on Armed Services, Military Implications of the Treaty on the Limitations of ABM Systems and the Interim Agreement on Limitation of Strategic Offensive Arms, 92nd Congress, 2nd Session,

1972, for the testimony of Administration officials, especially Secretary of Defense Melvin Laird.

[18]Abram Chayes, "An Inquiry into the Working of Arms Control Agreements," Harvard Law Review, Vol. 85, March 1972, pp. 905-969. I am indebted to Dr. James S. Finan, Directorate of Strategic Analysis, ORAE, DND, for many illuminating insights into this issue. See also, Laurence W. Beilenson, The Treaty Trap: A History of the Performance of Political Treaties by the United States and European Nations (Washington, D.C.: Public Affairs Press, 1969).

[19]For evidence of Soviet non-compliance, see the sources cited in Chapter 4, footnote 1. The most extensive accounts are those of David Sullivan, a former CIA Intelligence Analyst. Convincing though Sullivan's data is, his presentation of it uses the term "violation" to cover four different categories of Soviet conduct, all of which he establishes. These are: (a) clear-cut violations of the legally binding text of the SALT agreements; (b) potential violations of these agreements; (c) Soviet non-compliance with U.S. understandings of these texts; and (d) Soviet violations of the spirit of SALT. Supporters of the SALT agreements have objected that, strictly speaking, only (a) are violations, and have introduced the novel concept that only irreversible violations count. This legalistic defence of Soviet conduct misses the substantive question as to its meaning. But, to avoid this legalistic quibbling, the neutral term "non-compliance" has been used to concentrate on the substantive issues of verification and compliance. A typical pro-arms control position is Congressman Thomas Downey (D-New York), "The Reagan Freeze on SALT," Arms Control Today, Vol. 12, No. 10, November 1982.

[20]The Carter Administration's Reports to the Senate on Soviet Compliance with SALT I agreements and U.S. capabilities for verifying SALT II fit this characterization of the U.S. position. These were not, it should be stressed, impartial and objective assessments of compliance and verification. They were political assessments designed to further the President's overriding foreign policy objectives: securing a SALT II agreement. Accordingly, the reports interpreted Soviet non-compliance with what the U.S. had understood, in 1972, to be the key terms of the SALT I agreement to be compliance. It did so by defining this in legalistic terms. Where possible Soviet violations had occurred, the Carter Administration argued that the violation was only a possible violation, was not militarily too significant, and had ceased, while repeating Soviet denials that they had occurred. Similarly, the Carter Administration found it could verify compliance with the SALT II Agreement it wanted. The best comment on this was that the

verification issue was one which seemed likely to contribute to a Senate vote not to ratify the SALT II Treaty before it had to be withdrawn. See U.S. Department of State, Bureau of Public Affairs, "SALT I: Compliance; SALT II: Verification," Selected Documents, No. 7, February 1978.

[21]The important role telemetry plays in U.S. verification of Soviet missile test is insufficiently appreciated. This is because it was kept secret within the Carter Administration and held very closely even within the U.S. government machine. To summarize a complex issue, the U.S. depends on monitoring the electronic telemetry signals from Soviet test missiles, transmitting data on their performance during flight tests to Soviet ground stations, to estimate Soviet missile capabilities. The SALT II Agreement therefore contained, at U.S. insistence, provisions preventing, so the U.S. thought, Soviet encryption of these telemetry signals in ways preventing the U.S. from reading them. The Soviets now appear to be encrypting almost all of their important missile test data. On the telemetry issue in SALT II, see Strobe Talbott, Endgame: The Inside Story of SALT II (cited in Chapter 1, footnote 8), and Talbott, "Scrambling and Spying on SALT II," International Security, Vol. 4, Fall 1979, pp. 3-21. On the Soviet encryption of telemetry, see Aviation Week and Space Technology, general issues from 1981 onwards.

[22]Amron H. Katz, "Hiders and Finders," Bulletin of the Atomic Scientists, Vol. 7, No. 10, December 1961.

CHAPTER 6

Compliance Policy Problems in Practice

There are few aspects of arms control less well understood than compliance policy. This is true not only of the lay public, but of the professional arms control community. Insofar as compliance policy is discussed in the scholarly literature, it is usually as an afterword to an analysis of verification capabilities. What discussion there is, is based on Assumptions (1) through (5) of the simple, cooperative model of arms control agreements described in Chapter 3. There is ample documentation of the problems experienced by the U.S. and U.K. in making their compliance policies work, both in the inter-war and post-war years, demonstrating that Assumptions (3), (4) and (5), about compliance, are incorrect. But there has been a curious and disturbing failure to draw the appropriate conclusions from this evidence. This chapter will therefore try to remedy, in summary form, this gap in the literature as it affects this assessment of an ISMA's chances of functioning effectively.

The question of what compliance policy has to deal with was posed in 1962 by Dr. Fred C. Ikle, now U.S. Under Secretary of Defense for Policy, in an article: "After Detection -- What?"[1] That is, after a violation of an arms control agreement has been detected, what do the offended party(s)

do to enforce compliance with it, or impose sanctions for non-compliance. The standard answer, in arms control theory and the lay publics' mind, is summarized in Assumption 3:

> Assumption 3. If a significant violation of an agreement is established, compliance will be enforced by either abrogation of the agreement (the ultimate sanction) or, more likely, by the injured party to the agreement taking appropriate offsetting actions in one, or more, of three relevant contexts: (a) within the context of the agreement violated; (b) within the context of other arms control agreements and negotiations; or (c) within the context of its broader relations with the violating state.

Unfortunately, the U.S. and U.K. experience has been that it is almost never possible to persuade the government of the day, in democracies, to impose any of these sanctions, much less to impose sanctions that would be adequate to enforce compliance or punish violation. This is a surprising, and worrying, conclusion. But it is true of all significant arms control agreements, including SALT. Its validity is, however, best demonstrated by two agreements outside the scope of SALT: the inter-war naval arms control agreements, and those limiting Chemical and Biological weapons (warfare) -- CBW. Both examples prove that not

only Assumption (3), but Assumptions (4) and (5), are incorrect. These last two are:

Assumption 4. The self-interest of the injured party(s) compelling them to enforce compliance will be reinforced by (a) domestic public opinion in the democracies, especially in the U.S., which will be offended by any violations; and (b) world (actually state) public opinion, which will bring diplomatic pressure to bear on a violator to re-establish compliance with the violated agreement.

Assumption 5. Since a violating state will have entered into the violated arms control agreement for reasons of self-interest, it will have a vested interest in ensuring it is observed. Such violations as do occur will therefore, by definition, be accidental, rather than intentional. Any intentional violations will be isolated attempts to push to, or slightly beyond, the limits of the agreement, and to test the adequacy of the other party(s)'s verification capabilities. A persistent policy of controlled violations would be detected and would threaten the whole arms control process. Such a policy would therefore be extremely unlikely.

In assessing an ISMA's potential contribution to compliance with arms control and crisis management agreements,

the question is thus, to adapt Dr. Ikle's view, what an ISMA is going to do after it determines it has detected a potential violation or non-compliance. From past experience with the difficulties of making compliance policy work, the answer may be less than might be expected. Such was certainly the American and British experience with naval arms control.

Compliance Policy Case 1:
The 1919-1936 Naval Arms Control Agreement

This case is particularly interesting because the declassification of U.S. and U.K. records, plus the capture of German, Italian and Japanese archives in 1945, provides unusually detailed documentation of the usually highly classified, because politically sensitive, issue of compliance policy. The American and British experience was that their verification capabilities proved adequate, but their compliance policy failed. More precisely, their verification capabilites proved adequate to identify the militarily significant violations within a reasonable time after they occurred. They also characterized the size of these violations with reasonable accuracy. But they were still unable to persuade the political authorities in the U.S. and U.K. to raise, in a serious and substantive manner, the question of their violations with the violators, to impose sanctions

for these violations, or to take adequate actions to offset the effects of the violations.

This was because those responsible for compliance policy in both countries made the political judgment that their broad domestic and foreign policy goals were best served by not raising cases of violations and non-compliance. In terms of domestic politics, it would be unpopular to do so and difficult to get support for any sanctions either to enforce compliance or to offset the effects of non-compliance. In terms of foreign policy, both the American and British governments were trying first to cooperate with and, later, to appease the three countries that were to become the Axis Powers in World War II: Germany, Italy and Japan. The wisdom, or otherwise, of appeasement remains a subject for intense debate. But, for U.S. and U.K. compliance policy, it meant that there were perceived to be overriding political reasons for not acting even on clear cases of violations of naval arms control agrements.

These agreements were, chronologically, the 1922 Washington Naval Conference Treaty, the 1930 London Treaty, and the 1935 Anglo-German Naval Treaty. In addition, the 1919 Versailles Treaty limited German naval forces until repudiated by Hitler in 1934.[2] The limitations established were clear and simple, being based on displacement, calibre of main battery, and number of ships. Their legal status was also fairly clear until December 31, 1936, when a number of

changes occurred that meant non-observation of their limits represented non-compliance with a political commitment, if that, rather than violation.

Verification of compliance and non-compliance with these agreements was adequate for the democracies (U.S., U.K. and France), even after the establishment of totalitarian governments in the future Axis powers (Germany, Italy and Japan). Quantitatively, the number of units involved was very small. For example, the total number of Axis capital units completed between 1930 and 1942 was only 9.[3] Qualitatively, the basic naval technology of the era was known to all the Treaty powers and, although evolving, changed sufficiently slowly to preclude any major surprises. There were no short cuts to achieving improved performance. Hence the use of displacement as the major unit of limitation. Given the state of naval technology, no country could produce a significant improvement on the basic Treaty battleship/battlecruiser, aircraft carrier and heavy cruiser designs without going significantly over the Treaty displacement limit.

This meant that U.S. and U.K. Naval Intelligence departments were able to establish, relatively quickly, that all new German, Italian and Japanese construction of ships limited by the various Treaties exceeded these limits. They also established, fairly accurately, their extent. In current terminology, the U.S. and U.K. NTM identified early, and

characterized accurately, Treaty violations. Initial estimates, especially of the later, and larger, violations, were often provided when ships were launched, establishing their approximate hull size and armament, and hence displacement. The accuracy of the British estimates was confirmed by their having the opportunity to weigh the Italian "Treaty" cruiser Gorizia (Zara class) after she suffered an accidental explosion in 1937 and put into the British Gibraltar dockyard. As the distinguished official historian of the Royal Navy in World War II put it:

> Later that month the Italian heavy cruiser Gorizia was badly damaged by a petrol explosion while at Tangier. She was towed to Gibraltar and docked, and "careful measurements" revealed that, as had long been suspected, her displacement was at least 10% higher than the 10,000 tons permitted by the Washington Treaty. When this fact was reported home the CID considered making a protest in some form or other; but the Committee was anxious not to do anything which might vitiate the current attempt to achieve a rapprochement with Italy, and to obtain her accession to the 1936 London Naval Treaty. After a great deal of talk nothing at all had been done by the end of October 1937, and the matter was then apparently dropped.[4]

The most important violations of the naval treaties are summarized below in Table 2. These are described here as having been established by Anglo-American verification capabilities in the sense that they were identified and characterized reasonably accurately at the time, although not with the complete precision possible in retrospect.

Table 2

Major German, Italian and Japanese Violations of, or Non-Compliance With, Inter-War Naval Arms Control Agreements, Arranged Chronologically*

German

(1) Construction of 3 Pocket battleships displacing 12,500 tons/11" guns (versus limit of 10,000 tons/11" guns), 1928-1933.

(2) Construction of 2 battleships and 2 battlecruisers displacing 42,000 tons and 32,000 tons (versus limits of 35,000 tons and 26,000 tons), 1934-1941.

(3) Construction of 6 (3 completed) heavy cruisers displacing 15,000 tons (versus limit of 10,000 tons), 1935-1940.

Italy

(1) Construction of 7 heavy cruisers displacing 11,100-12,000 tons (versus limit of 10,000 tons), 1925-1933.

(2) Construction of 4 (3 completed) battleships displacing 42,000 tons (versus limit of 35,000 tons), 1934-1942.

Japan

(1) Construction of 14 heavy cruisers displacing 11,300-14,500 tons (versus limit of 10,000 tons), 1924-1939.

(2) Arming of 4 of these cruisers with 8" calibre main battery (versus limit of 6.1"), 1939-1940.

(3) Construction of 4 (2 completed) battleships displacing 64,000 tons and carrying 18" main battery (versus treaty limits of 35,000 tons and 16" main battery), 1937-1941.

*Dates of construction are for first of class laid down and last completed. Estimated displacements of these units by Washington Treaty standards vary slightly between post-war sources. In contrast, pre-war and wartime editions of the authoritative Jane's Fighting Ships (London: Sampson, Low, Marston and Co., annually) incorrectly lists displacement of these units as being within Treaty limits.[5]

There are four obvious points made by this table. First, significant violations began in 1925, only three years after the 1922 Washington Naval Treaty was signed, and continued throughout the life of the various naval arms control regimes until World War II started in 1939. Second, the violations were clear-cut and numerous, although describable as controlled, limited, violations until about 1934. Thereafter, they became increasingly uncontrolled violations. Third, there is a nice legal question as to whether Axis capital units laid down after 1936 could be said to have violated the letter of Treaty restrictions, since the Washington Treaty lapsed that year. They certainly violated its spirit.[6] But adherence to the spirit of this, and the other naval arms control agreements, severely limited Anglo-American construction. Fourth, these violations were militarily significant, especially in capital units and heavy cruisers. Compliance with the totality of the Treaty limitations contributed to the adverse naval balance that very nearly cost Great Britain the war at sea, and hence the war, between the fall of France, in June 1940, coupled with Italy's entry on Germany's side, and America's entry into the war on December 7, 1941. U.S. compliance with these restrictions contributed substantially to the naval weaknesses resulting in her early defeats in the Pacific in 1941-42. All four points were known, in their

essentials, to the U.S. and U.K. navies and their governments.

This makes it particularly interesting and significant that all of Assumptions (3), (4) and (5) proved wholly incorrect. Neither the U.S. nor the U.K. governments ever contemplated imposing any sanctions on any of the three violators in any of the three possible contexts described in Assumption (3). This was because Assumption (4) proved, in this instance, to be the reverse of the reality. Although both governments recognized that they had a vested self-interest in enforcing compliance, they also felt that the costs of doing so would be too great. These costs were felt to be high in terms of domestic public opinion and election results. Far from being likely to be outraged by such violations, American and British public opinion seemed likely to oppose any attempt to even raise these violations, because to do so would upset relations with the violators. The same view was held by those states supposed to bring diplomatic (international public) opinion to bear on the violators. None of their smaller neighbors raised the possibility of their having violated treaty limitations, because to do so would risk increasing their displeasure. And the costs of this could include, ultimately, military sanctions.

These costs were also felt to be high in terms of the broad defence and foreign policy goals of the U.S. and the U.K. The U.S. was increasingly concerned with containing

the Japanese Empire after the 1931 Mukden incident in China. But, before that, there had been considerable friction between the American and British governments over American actions under the naval limitation treaties. In particular, the British were concerned that the U.S. modernization of their battlefleet would increase its offensive power, contravening the spirit, if not the letter, of the 1922 Washington Treaty. They were also concerned at U.S. plans to build to the Treaty limits on number of heavy cruisers, creating a U.S. potential to challenge a repetition of British World War I blockade of Germany, or any other continental power. The British also suspected, correctly, that the two U.S. Treaty large carriers were over the 33,000-ton displacement limit. Their true displacement was 36,000 tons.[7] But the U.S. calculated that the British would tolerate this one clear violation and one major non-compliance with the spirit of the Treaty, because they could not risk the political costs of challenging these.

Significantly, the British government's political judgment in this first test of their compliance policy proved to be the same one it would make in all future cases. This was that Britain's overall foreign and domestic political interests overrode those in enforcing compliance with what they perceived as the letter and spirit of the Treaty. The U.S. government was to make the same judgment, although

it did more to offset the effects of violations and non-compliance.

The difficulties in making such judgment calls were seen in subsequent events. These suggested that the British were quite right not to engage in a major confrontation with the Americans in the 1920s. Whether they were right to refrain from doing so in the case of Italy and Japan in the 1920s and 1930s remains debatable.[8] It made sense to do so as long as the policy of appeasement of these two countries was judged to be working. But it increased the costs of the failure of this policy after they entered World War II in 1940 and 1941. It is much more difficult to see how it made sense for the British to ignore the German violations of the 1935 Anglo-German Naval Agreement.

Like the British, the Americans also calculated that challenging the Japanese violations and non-compliance would be unproductive. It would further reduce any chance of limiting Japan's expansion by means short of war. It was unlikely to increase domestic U.S. support for increased naval spending to offset the effects of Japan's action, or enforce compliance.

Unlike the British, the Americans were in a better position to anticipate Japan's legal withdrawal from the naval arms control regime. With top-level political support from President Franklin D. Roosevelt, the U.S. Navy designed its first so-called Treaty battleships both to carry 14-inch

calibre main battery (if the Japanese stayed in a Treaty regime with this limit) and a 16-inch calibre main battry (if they did not). The Japanese withdrew, and the first U.S. Treaty battleships carried a 16-inch main battery and displaced some 3,000 tons over the now-expired Treaty limits of 35,000.[9] Thus, while the U.S. government took a political decision not to raise the question of Japanese (plus German and Italian) violations and non-compliance, it also took a political decision to offset some of the military effects of these actions.

For an ISMA, this experience suggests that the question of what to do if it detects potential violations or non-compliance will be a very political, and a very difficult one. It will have to be taken by the ISMA as an organization and by the national governments participating in the ISMA, individually and collectively. Their actions appear likely to be determined by two sets of considerations. One set, the narrower one, will be those of arms control, and the need to enforce compliance with agreements. The other set, the broader one, will balance arms control considerations with those of foreign and domestic politics. These may suggest that enforcing compliance with arms control is not an overriding priority.

This point is reinforced by considering the judgments made by the senior levels of the British Foreign Office and the Royal Navy.[10] Both might have been expected, in terms

of the simple model of verification and compliance, to look for evidence of violations, and to argue for sanctions against the violators. Given Britain's long tradition of maritime superiority and involvement in international affairs, these two organizations might have been expected to take a strong line and to get a sympathetic hearing from the British political authorities of the day. Yet the reaction of the Foreign Office and the Royal Navy was to try to reject the evidence of German, Italian and Japanese violations on the grounds that it would create too many problems if it were true.

Their argument was that there was no chance of getting the political authorities to raise the question of violations with the violators, much less to impose sanctions. There was also little chance of getting increased budget authorizations to increase British naval construction to offset the effects of the treaty violations. There was absolutely no chance of securing political authorization for Britain to withdraw from the treaty limitations which she was observing. The cumulative effect of this British inability to respond to treaty violations was to reduce the Royal Navy, like the Foreign Office, to hoping that the Axis powers would observe the treaty limits. These had become the only means left of preserving Britain's naval power, together with the political commitments it guaranteed. Since this was the British position, it was not surprising

that international diplomatic opinion was ineffective in even raising the question of Axis treaty violation.

Ironically, too, the result of this British position was that the Royal Navy, of all organizations, found itself supporting Assumption (5) in the simple model of verification and compliance. In this naval arms control context, this meant arguing that Hitler's Germany (after 1933), Mussolini's Italy (after 1922) and an expansionist Japan (after 1931) must be intending to honor their treaty commitments, otherwise they would not have accepted them. That such an argument was unlikely to be correct, and contradicted by the evidence, did not prevent it from being advanced and accepted at the highest levels. Indeed, the less likely it became that the governments of the Axis powers could be expected to observe any agreements, and the more evidence that emerged of their violations of the naval arms limitation treaties, the more strongly the British Admiralty insisted that they must really intend to observe these naval limitations.

For these reasons, it was left to Hitler to denounce the 1935 Anglo-German Naval Agreement on April 27, 1939. As late as December, 1938, the Admiralty was holding futile discussions with Germany on the implementation of this Agreement, after being informed of German plans to build up to 100% of the British submarine tonnage, while arming their two latest cruisers with 8" guns.[11]

As a result of these pressures against any British action to enforce compliance with, or impose sanctions for the violation of these naval arms control agreements, pressure developed to reject the evidence of violations. Here again, the 1935 Anglo-German Naval Agreement offers a good example of the Admiralty's approach. The Agreement extended the 35,000-ton displacement, and 16" main batery, which were the Washington Treaty limits to the capital units Germany had been free to build since her 1934 repudiation of the 1919 Versailles Treaty. The Plans Division in London "...had been closely involved in negotiating, and therefore believed in ... various Treaties." As the Director of Plans put it: "Our principal safeguard against such an infraction of treaty obligations lies in the good faith of the signatories."[12] This was despite the British knowledge that the Italian so-called Treaty cruisers were 10% to 12% over Treaty limits, and that their Vittorio Veneto class battleships was substantially over limits by about 20%. So although it was unlikely that Hitler would be more honest than Mussolini, the Admiralty Naval Staff were reluctant to accept the Naval Intelligence Division's (NID) argument that Germany's battleships Bismarck and Tirpitz, were substantially over the Treaty limits. In fact, they displaced some 41,500-42,000 tons, Washington Treaty standard, some 20% over the 35,000-ton limit. As the recent biographer of the

great wartime Director of Naval Intelligence, Admiral J.H. Godfrey, put it:

> Another question was the exact size of Germany's two projected battleships of the Bismarck class. These should not have exceeded the tonnage laid down by the Washington Treaty, 35,000 tons. The Germans truthfully disclosed their proposed length, beam, armament and certain other particulars but gave a totally false dimension for their draught, 26 feet instead of the actual figure, 34 feet. Admiral Raeder personally assured the British Naval Attache, Captain Troubridge, that the former figure was correct and that the new ships would conform to Treaty limitations. As the two ships were longer, beamier and carried a heavier armament than the new British King George V class, the only possible explanation for the lighter draught had to be that their armour, speed and endurance would be correspondingly reduced. The British technical departments were naively reluctant to believe that the Germans were deliberately lying. It would have been inconvenient politically and would have meant, as in fact was the case, that the German ships would be well over 40,000 tons and would therefore outclass their British equivalents. The German Section of NID were highly sceptical, but unfortunately could not prevail on NID7, the technical section, to support them against the considered views of the rest of the Naval Staff, an example of the dangers of relying on one's "experts" and of the folly of trusting to the good faith of foreigners.[13]

Admiral Godfrey himself summed up the three lessons of the Bismark and Tirpitz episode for intelligence as being:

1. The unwillingness of authority to believe information that has awkward political implications.

2. The tendency of naval officers, and others who have taken part in negotiations, to become advocates of the integrity of the persons with whom they secured agreement, and to lose the skepticism which is part of vigilance.

3. Our technicians may not be the best judges of enemy intentions and achievement. They find it hard sometimes to believe that what they cannot do or have not thought of doing has been done by the other side.[14]

A similar verdict, by an expert on Britain's wartime naval intelligence, was Donald McLachlan's, on the peacetime naval staff's reaction to NID evidence of Treaty violations:

> "That might be 'awkward'; that is to say, in sharp conflict with current strategic doctrine or political appreciation. They probably felt that if Germany were in fact cheating and could be proved treacherous, no one in the Foreign Office or Downing Street would handle the accusation effectively; why, then, make it?"[15]

These conclusions are reinforced by two further pieces of evidence about the Admiralty's view of the 1935 Agreement. First, during the preliminary negotiations, in June, they accepted the German declaration of the two Scharnhorst class battlecruisers' displacements at 26,000 tons, instead of their true and obvious 32,000 tons. Second, a year later the Foreign Office was raising doubts about whether Germany intended to observe the Agreement, while the NID accepted

Admiral Raeder's categorical denial, as Head of the German Navy, that it was violating the Agreement.[16]

The culmination of this process was reached with the Admiralty insistence that the King George V class battleship be designed, in 1936, to carry a 14" calibre main battery because this might persuade the Japanese to accept such a small calibre at the 1936 London Naval Conference. Predictably, the Japanese rejected this limitation, and went on to build the Yamato class battleships with 18" calibre main batteries.

The conclusion, from this analysis of naval arms control agreements in the inter-war years, must be that none of the last three Assumptions (numbers 3, 4 and 5) in the simple theoretical model of arms control verification and compliance are wholly valid. Yet these Assumptions are individually and collectively essential to the successful working of an ISMA. Even if it were assumed that the considerable obstacles (described in Chapter 4) to an ISMA performing its verification activities adequately could be overcome, these would not, on their own, enable it to contribute to compliance with arms control agreements. To do this, an ISMA would have to operate in a world in which Assumptions (3), (4) and (5) were valid. Unfortunately, the available evidence of how compliance policy works in reality suggests that all three assumptions are questionable.

Far from being an atypical instance of the difficulties democracies experience in making their compliance policy work, the inter-war naval arms limitations treaties seems to be typical. It is distinctive in that the nature and extent of the violations that occurred were clear. U.S. and U.K. verification capabilities proved adequate to establish these, but inadequate to persuade the U.S. and U.K. governments to enforce compliance, because they did not judge this to be in their broader political interests. As these were militarily significant violations occurring over a number of years, it would appear that it is very difficult for verification capabilities, even if effective, to persuade governments to give priority to compliance policy where it conflicts with other policy objectives, foreign and domestic. This suggests that, even if an ISMA's verification capabilities were reasonably effective, they would still not necessarily persuade governments to enforce compliance with arms control agreements.

The British experience in the inter-war years underlines this point. The British had some four centuries of experience as a major international power to teach them the necessity of enforcing treaty compliance. Yet domestically, the basic problem the British government faced was the popularity of arms control and disarmament with the electorate, coupled with the unpopularity of defence spending and defence programs. This meant that even raising the

possibility of violations of naval arms control agreements would be prohibitively costly in domestic political terms. There would be no domestic support for the sanctions needed to enforce compliance, or to offset the consequences of non-compliance by Germany, Italy and Japan. These domestic difficulties compounded the external problems facing successive British governments. They contributed to their judgment that attempting to enforce compliance would be counter-productive.

The behavior of the three Axis powers emphasized the likelihood of non-democratic governments taking advantage of the opportunities for gaining military advantages by non-compliance with arms control agreements. They did so on a far larger scale than the two U.S. examples cited above or some French actions. These included rejection of the Washington Treaty limits in cruiser construction, which the French nevertheless observed. For about the first decade of the Washington Treaty regime, the Axis violations were controlled, but militarily significant. They took naval arms control limitations as limits they could exceed, but not by too much, and not too obviously. The main products of this era of controlled violations from 1922 to 1931, were the seven Italian and the twelve Japanese heavy cruisers between ten and twenty-five percent over the Treaty displacement limitations plus the three German pocket battleships. These were, it is worth noting, designed as early as 1927, six

years before Hitler came to power.[17] Germany was then a democracy, but one in which military requirements were given priority over compliance with the 1919 Versailles Treaty's limitation on German naval, ground and air forces.

The coming to power of more expansionist governments in Germany in 1933 and Japan in 1931 meant the authorization of increasingly uncontrolled violations, with Italy following suit. They realized that neither of the two main democratic naval powers, the U.K. and the U.S., nor France would be likely to even accuse them of violations, much less impose sanctions for these. They also knew that the democracies were continuing to comply with these naval arms limitations.

It would be encouraging for an ISMA's chances of working successfully if these problems with compliance policy experienced by democracies were confined to the inter-war period. This is particularly true, given the support for the ISMA concept that has come from democratic countries including France and Sweden. Unofficial groups in Britain and Canada have also supported the idea. Regrettably, these problems with compliance policy appear to have been as great, or greater, for the democracies in the post-war years. The most recent and best documented case is that of Soviet use of CBW, which will now be summarized.

Notes

[1]Fred C. Ikle, "After Detection -- What?" Foreign Affairs, Vol. 39, January 1961, pp. 208-220.

[2]Sigfried Breyer, Battleships and Battlecruisers 1905-1970 (New York: Doubleday, 1973); Alan Raven and John Roberts, British Battleships of World War Two (Annapolis, Md.: U.S. Naval Institute Press, 1976); Alan Raven and John Roberts, British Cruisers of World War Two (Annapolis: U.S. Naval Institute Press, 1980); Sir Winston S. Churchill, The Second World War, Vol. 1, The Gathering Storm (London: Cassell & Co., 1948).

[3]The date of 1942 was chosen to exclude those Axis capital units not completed. By country, the number of capital units involved was, after 1930 and excluding these units: 4 German, 2 Japanese and 3 Italian. The Italian Roma was completed in 1942 but saw no active service. She was sunk by German aircraft during the surrender of the Italian Fleet to the Royal Navy on September 9, 1943.

[4]Roskill (cited in Chapter 4, footnote 3), p. 371.

[5]This data is drawn from Breyer, plus Raven and Roberts, cited in footnote 2 above. Useful discussions of the Axis treaty violations and of the perception of them by the German, Italian, and Japanese political and military authorities are in the Warship Profile series, published by Profile Publications, Windsor, U.K. These are No. 4, Kapitan zur See Gerhard Bidlingmainer, Kriegsmarine (KM) Admiral Graf Spee, 1971; Nos. 6, 18 and 33, F/Kapitan AD D. Paul Schmalenbach, KM Prinz Eugen, 1971; Bismarck, 1972; Scharnhorst and Gneisenau, 1973; No. 17, Lt.-Commander Aldo Fraccaroli, RItn Zara, 1972; No. 30, Masataka Chihaya, IJN Yamato and Musashi, 1973. Also useful are Warship, A Quarterly Journal of Warship History, general issues from 1977 onwards (Greenwich, U.K.: Conway Maritime Press), and Warship International, general issues from 1958 onwards (Toledo, Ohio: International Naval Research Organization).

[6]After 1936, the legal status of the various naval arms control agreements listed in Table 2 became extraordinarily ambiguous. Japan was not legally limited in her battleship construction.

[7]Roskill, Vol. I, especially pp. 331-356 and 351-356 (cited in Chapter 4, footnote 3).

[8]On the Pacific situation, see Roger Dingman, Power in the Pacific: The Origins of Naval Arms Limitations 1914-1922 (Chicago: University of Chicago Press, 1976).

[9]On the design of the U.S. Treaty battleships, see Alan Raven and John Roberts, British Battleships of World War Two, pp. 273-318 (cited in footnote 2 above).

[10]This point emerges particularly clearly from the accounts of Donald McLachlan, cited in Chapter 4, footnote 3, and Steven Roskill, cited also in Chapter 4, footnote 3. A revealing summary of this attitude was given by Amron Katz, "The Fabric of Verification: The Warp and the Woof," cited in Chapter 1, footnote 9.

[11]Roskill, Vol. II, pp. 448-449 (cited in Chapter 4, footnote 3).

[12]Katz, footnote 10 above, quoting McLachlan, footnote 10 above.

[13]Patrick Beesley, Very Special Admiral: The Life of Admiral J.H. Godfrey, CB (London: Hamish Hamilton, 1980), pp. 115-116.

[14]Quoted in Katz, footnote 10 above, p. 198.

[15]McLachlan, footnote 10 above, quoted in Katz, footnote 10 above, p. 198.

[16]Churchill, pp. 107-111 (cited in footnote 2 above); Roskill, Vol. II, pp. 302-309 (cited in Chapter 4, footnote 3).

[17]Some idea of the technical problems encountered in characterizing accurately the extent of violations of arms control agreements, is indicated by the difficulty British and American naval intelligence had in estimating precisely how much over the displacement limit the pocket battleships were. They contained a number of new features, including extensive welding, to save weight, and diesel engines, giving much greater endurance for the ships' commerce-raiding role. The German Navy and government were naturally careful to play up the suggestion that these innovations were so successful in saving weight that the pocket battleships were within the treaty limitations of 10,000 tons, although knowing that they displaced some 12,500 tons. The first pocket battleship, Deutschland, was designed in 1927, laid down in 1929, and completed in 1933. See Breyer, pp. 287-291 (cited in footnote 2 above).

CHAPTER 7

Compliance Policy Problems: The CBW Case

There now seems no doubt, from the open source literature, that the Soviet Union has been using CBW in Indo-China, since 1975, and in Afghanistan, since 1980. The U.S. evidence released to this effect is convincing on its own,[1] but has been reinforced by the findings of a French commission of investigation, that confirmed Soviet CBW use, and by a more limited independent Canadian investigation.[2] The following discussion will therefore assume that, since the available evidence has established Soviet CBW usage, the Soviets have used, and are using, CBW. Such Soviet CBW usage is consistant with their general approach to the observance of international treaties in general and arms control agreements in particular.[3]

For the purposes of this assessment on the chances of an ISMA contributing to the observance of arms control agreements, the experience with Soviet CBW use since 1975 confirms that Assumptions (3), (4) and (5) in the simple model of verification and compliance needs modification in the light of experience. This suggests that it is extremely difficult for compliance policy to work as it should work if compliance with arms control agreements is not secured.

This problem with compliance policy is an asymmetrical one, affecting primarily democracies.

The experience with Soviet CBW use may be summarized as follows.[4] Between 1975 and 1979, U.S. NTM of verification identified and characterized Soviet use of CW and BW in Indo-China. The agents used were of Soviet origin, employed by Soviet and North Vietnamese forces, plus indigenous forces (Cambodian, Laotian, Vietnamese) working for the Soviets and North Vietnamese. They were apparently using CBW for two purposes.[5] First, to punish the H'mong tribesmen for fighting effectively and loyally on the side of South Vietnam and the U.S. Second, to defeat indigenous guerrilla forces opposing North Vietnamese occupation of Cambodia, Laos and South Vietnam. The Soviet CBW agents identified apparently comprised asphyxiating CW agents, including some so-called nerve gases, and BW agents that were not previously known to exist, mycotoxins. These are not living BW agents, but dead toxins that function in manners more analogous to lethal CW agents. They kill unprotected combatants and non-combatants, and permit rapid follow-up occupation of the attacked area.

Soviet use of these CBW agents violated, and violates, two arms control agreements and customary international law. The 1925 Geneva Protocol forbids the first use of asphyxiating CW agents, while allowing their manufacture and stockpiling to provide a retaliatory capability in the event of a

breach of the Protocol's No-First-Use-(NFU)-of-CW provision. The Soviet Union ratified the Protocol soon after its signature. The U.S. did not do so until 1974, but had always stated it would abide by the Protocol's restrictions, and did so. The 1972 BW Convention (BWC) forbade the manufacture, stockpiling and use of BW, but allowed BW research. Both the Soviet Union and the U.S. ratified the BW Convention soon after signing it in 1972.

It is also important to note that U.S. verification machinery did not function in the ways postulated by Assumptions (1) and (2) in the simple model of verification and compliance. Because the CBW usage was occurring in Indo-China, there was a considerable reluctance in the U.S. bureaucracy to become involved in an area where the U.S. had recently ended a controversial involvement in the second Indo-China War (1954-1975). An additional consideration may have been that the Soviets could raise the false countercharge that the U.S. had used CW in Vietnam. This is a complex issue because the U.S. did not use any lethal CW, prohibited by the 1925 Geneva Protocol, or any BW prohibited by the 1972 BWC. The U.S. did use defoliants and riot control agents which it regarded as permitted under the Protocol. This U.S. interpretation is disputed. Substantively, there is no comparison between this U.S. use of CW which under the Convention was ambiguous and the Soviet use of CBW, which was clearly prohibited. Poli-

tically, though, the U.S. may have felt inhibited in raising charges of Soviet CBW use. Moreover, because any finding of Soviet CBW use would create major problems for the arms control process, and for Soviet-American relations, there was a reluctance to seek conclusive evidence of such usage.[6] Consequently, it might also be said that U.S. verification machinery functioned in spite of itself in finding, by 1979, that the Soviets were using CBW in Indo-China.

The then U.S. Administration of President Carter chose not to raise this issue with the Soviets in any serious manner, or to publicly accuse the Soviets of violating the Geneva Protocol and the BW Convention. Following the Soviets' December 26, 1979 invasion of Afghanistan, they began using CBW there. Because the areas where CBW was used in Afghanistan were much more accessible to U.S. NTM, it was possible to identify and characterize the Soviet CBW use much more quickly and precisely than in Indo-China. Additional evidence of this was also provided by U.S. NTM in the period 1980-81. U.S. NTM also identified what appeared to be an accident at a Soviet BW manufacturing plant at Sverdlovsk in 1979. The evidence for this seems, from the sources consulted, to have been convincing, if not conclusive, while the subsequent evidence of Soviet BW use makes it certain that they manufacture and store BW agents.[7] It therefore seems probable, now, that what

looked, in 1979, like an accident at a Soviet BW manufacturing plant was just that.

By Fall, 1981, the new U.S. Administration of President Ronald Reagan thus felt able to charge the Soviets, in public, with violating the Geneva Protocol and the BW Convention. These charges have been repeated at regular intervals by senior Administration officials, including the President. By late 1982, these charges had even been reluctantly accepted as valid by a sceptical U.S. media, as represented by the Los Angeles Times and The Washington Post. The influential Wall Street Journal had accepted evidence of Soviet CBW usage as early as 1981, and embarked on a single-handed crusade to publicize their treaty violations and demand the imposition of sanctions against the Soviets.[8]

According to Assumption (3), public opinion in the Western democracies, especially the U.S., should have been aroused, and compelled the U.S. and her allies to enforce Soviet compliance with the arms control agreements they were violating. They should also have been compelled to impose additional sanctions on the Soviets for their violations. None of these consequences came about. Public opinion, even in the U.S., was not aroused by Soviet CBW usage. The U.S. arms control community, which would, in Assumption (3), have been expected to take the lead in raising the issue in public, did not do so.

On the contrary, parts of this community were reluctant to accept the evidence that the Soviets were using CBW, apparently because this would show that the Soviets were prepared to violate arms control agreements. Although most of this community has now accepted as valid the evidence of Soviet CBW use, it has yet to advocate the imposition of sanctions that would secure Soviet compliance with the arms control agreements they are violating, and punish their violation. Instead, the argument is advanced that Soviet CBW use should not be allowed to upset the more important SALT process.[9] Similar arguments also appear to enjoy some support in those parts of the U.S. government primarily concerned with negotiating such agreements, the Arms Control and Disarmament Agency (ACDA) and the State Department.[10] During the 1983 Senate Hearings on the confirmation of President Reagan's nominee for the Director of the ACDA, Dr. Kenneth Adelman, it was significant that the Senate Foreign Relations Committee did not raise in depth the problems posed for arms control by Soviet CBW use, although Alderman had raised this issue as Deputy U.S. Ambassador to the United Nations. The Administration secured his confirmation through a vote of the full Senate.[11]

This episode is relevant to this assessment of an ISMA's chances of functioning effectively because it demonstrates that Assumption (3) is not only questionable, but is really the reverse of the reality. Evidence of violations of

arms control agreements do not necessarily produce a major drive to punish the violators which is supported by public opinion in the democracies. If anything, it produces the reverse. There is a tendency to ignore the evidence of violations, to wish to avoid punishing the violators and to avoid asking the awkward questions about the likelihood of the violators (here, the Soviets) of one (in this case, two) arms control agreement violating other agreements in this area.

Similar conclusions can be drawn about Assumption (4). This, too, is really the reverse of the reality. There has been no overwhelming, vocal and effective condemnation of Soviet CBW use from international diplomatic (world public) opinion. The U.S. has now begun to raise these questions seriously, but has taken a long time to do so. There has also been a relative reluctance to investigate, effectively and quickly, the evidence of such use. Presumably, this is because if evidence of such use were found, it could require at least a diplomatic disapproval of Soviet action by an international community that does not wish to incur Soviet displeasure. Such criticism as has been voiced, besides that of the U.S., has varied from moderate to muted and has also been conspicuous by its absence. It has also failed to halt Soviet CBW use. The relatively limited attempts to date by the U.N. to investigate the evidence of Soviet CBW use are symptomatic of this approach.[12]

This also casts doubts on an ISMA's ability, as a U.N. agency, to investigate, in an effective and timely manner, evidence of non-compliance with arms control agreements by non-democratic governments, including that of the Soviet Union. The Soviets have not only refused to help the U.N. investigations into CBW use, but have obstructed them, partly through the use, according to published accounts, of a Soviet national in the U.N. Secretariat, under whom the investigations have fallen: the Deputy Under-Secretary for Political and Security Council Affairs, Viacheslav A. Ustinov.[13] The governments of the Soviet Union's allies, North Vietnam, Cambodia and Laos, have refused the U.N. investigation teams access to their territory, while the Soviets have refused them access to occupied Afghanistan. It must also be said that, if the published accounts are correct, the U.N. investigating teams to date have not pursued their investigations with the zeal required to identify and characterize promptly such major violations of arms control agreements. After some two years, U.N. investigations had failed to reach any meaningful conclusions, either confirming or denying Soviet CBW use. Significantly, the Fall 1982 U.N. General Assembly session voted to establish a new, hopefully more effective investigative effort, not under the jurisdiction of a Soviet national employed by the U.N.

It is also relevant to this ISMA assessment to note the attitudes of the democracies where interest has been expressed in the ISMA idea. France supported an investigation into Soviet CBW use and concluded that it exists and is continuing. The French government has not, as yet, seen fit to impose any sanctions on the Soviet Union.

Sweden has displayed a notable reluctance to investigate Soviet CBW use and to raise the resultant questions about the implications for arms control. This omission is particularly important, in the ISMA context, for three reasons. First, Sweden has officially and unofficially been one of the originators and proponents of the ISMA concept. Second, the Swedish government helped establish, in 1969, one of the major independent Western centers of strategic research, the Stockholm International Peace Research Institute (SIPRI). While SIPRI's research has come under increasing criticism for its pervasive anti-American bias, its work on CB weapons systems and their control has been truly impressive.[14] In their entirety, the collected SIPRI works on CBW represent an exhaustive study of these weapons, their manufacture, both actual and potential, and the possibilities for their control. SIPRI is also strongly committed to arms control in principle, and particularly in the case of CBW.

This makes the Institute's failure to pursue the allegations of Soviet CBW use a singular omission. SIPRI

is, after all, an independent body and so not inhibited by the diplomatic considerations that might restrain a Swedish governmental investigation. If a SIPRI study were to find, as it appears it would have to, that the Soviets were using CBW, the Institute could use its independent position to offer some constructive suggestions as to the courses of action to be taken to enforce Soviet compliance with two important arms control agreements. Whatever the reasons for the Institute's failure to pursue these questions, their failure helps emphasize the difference between verification and compliance in the simple model, on which the ISMA is based, and the real world.

The third reason why the lack of Swedish reaction is significant is the considerable importance attached to arms control and disarmament issues in Swedish foreign policy and in Swedish public life. This is typified by the current Swedish Prime Minister, Mr. Olaf Palme, chairing, before his recent election victory, a major international study on these issues.[15] The Swedish government might therefore have been expected to take the lead on verifying Soviet compliance, or non-compliance, with the Geneva Protocol and the BW Convention and, if it found the Soviets guilty of non-compliance, to suggest ways of enforcing compliance. That it has not done so suggests that, even if an ISMA was established, the contribution to its effective functioning that could be made even by strongly supportive governments,

like Sweden's, might be considerably more constrained than an ISMA proponent would expect.

To a lesser extent, similar comments apply to the Canadian response, both governmental and non-governmental, to the evidence of Soviet BW use. The question of whether these responses are appropriate is not relevant to this ISMA study. What is relevant is that, as in Sweden, great importance has been attached to questions of arms control and disarmament by all Canadian governments and political parties, by non-governmental groups, by the media and by the population as a whole. There has also always been an especial Canadian commitment to outlawing the use of CW, because Canadian troops were among the first casualties in the first use of modern CW in World War I. According to Assumptions (3) and (4), in the simple model of verification and compliance, both the Canadian government and the Canadian public should therefore have reacted particularly strongly to the first evidence of Soviet CBW use, insisted that it be confirmed or denied, and, if confirmed, insisted on the imposition of sanctions to punish the Soviets for such use and enforce their compliance with the relevant arms control agreements. Since this did not happen, it confirms that Assumptions (3) and (4) are not only incorrect, but the reverse of the reality.

Conclusion

The experience with the inter-war naval arms control agreements and the Soviet use of CBW since 1975 shows that Assumptions (3) and (4) in the model of verification and compliance on which the ISMA concept is based are not valid. There is no major pressure from public opinion in democracies that reinforces their governments' self-interest in enforcing compliance with arms control agreements when verification machinery identifies militarily significant violations of these. On the contrary, both the publics (including interested groups) and the governments of democracies appear anxious to avoid evidence of violations of arms control agreements because of the resultant need to enforce compliance and punish the violator(s). To do so will incur costs that are political, economic and perhaps even military. Assumption (3) is thus the reverse of the reality. So too, is Assumption (4). There is no pressure brought to bear on the violators from so-called world public opinion (really international diplomatic, governmental opinion). Less powerful states have no desire to offend major powers violating arms control agreements by even raising the question of their violations. They will be even less willing to impose sanctions on the violators, for fear of still stronger reprisals.

These two experiences with arms control agreements also emphasize a major flaw in Assumption (5). Neither the three Axis powers in the inter-war years, nor the Soviet Union in the CBW case, entered into the arms control agreements they violated intending to observe them for reasons of self-interest. Instead, they were prepared to engage in violations where these were militarily useful. They were, however, careful to keep their initial violations limited, so as to avoid counter-balancing actions by the democracies who were complying with these agreements. These initial controlled violations became less controlled as the violators became encouraged by the lack of response to their violations by the democracies.

In a broader political context, it also bears noting that Assumption (5), that all parties to arms control agreements will follow their self-interest in observing them in spirit and letter, requires these to form a unique class of inter-state agreements. Historically, most states and certainly almost all non-democratic states have violated diplomatic agreements whenever they perceived the benefits of doing so as outweighing the costs. In the words of Napoleon: "Treaties are observed as long as they are in harmony with interest." That their calculations of the benefits and costs has not always been correct, in the long run, does not alter the validity of this statement. The list of diplomatic agreements broken by Germany, Italy

and Japan, from 1919 to 1945, would be a very long one indeed. So would the list of diplomatic agreements broken by the Soviet Union since 1917. Yet to state that a Soviet government will violate international agreements, including arms control agreements, when it is in the perceived interest of the Soviet Union to do so, is to do no more than observe that the Soviets follow the rules of Realpolitik. This means, however, that it is incorrect to treat Assumption (5) as wholly valid.

Notes

[1]U.S. Department of State, "Chemical Warfare in South-East Asia and Afghanistan," a report to the Congress from the Secretary of State Alexander M. Haig, Jr., Special Report No. 98, March 22, 1982; "Chemical Warfare in South-East Asia and Afghanistan: An Update," a report from the Secretary of State George P. Shultz, Special Report No. 104, November 1982. These findings were confirmed by the President's January 23, 1984 Report on Soviet Non-Compliance with Arms Control Agreements, cited in Chapter 2, footnote 4.

[2]Schiefer Report to the Department of External Affairs (Canadian Government), The Study of Possible Use of Chemical Warfare Agents in South-East Asia, University of Saskatchewan, 1982.

[3]See footnote 18, Chapter 5.

[4]See Sterling Seagrave, Yellow Rain: A Journey Through the Terror of Chemical Warfare (New York: M. Evans and Co., 1981), pp. 16-20; U.S. Congress, House of Representatives, Committee on Foreign Relations, Subcommittee on Asian and Pacific Affairs, Use of Chemical Agents in South-East Asia Since the Vietnam War, 96th Congress, 1st Session, December 12, 1979, pp. 48-49.

[5]See the Heritage Foundation, "Moscow's Poison War," Backgrounder, Washington, D.C., February 5, 1982, p. 5; John Everingham, "Flight into Controversy," Far Eastern Economic Review, Vol. 115, No. 3, January 15, 1982, pp. 22-26.

[6]This point is developed in the article by Sterling Seagrave cited in footnote 4 above, pp. 231-232, on the issue of footdragging by the Carter Administration.

[7]U.S. Congress, House of Representatives, Select Committee on Intelligence, Subcommittee on Oversight, The Sverdlovsk Incident: Soviet Compliance with the Biological Weapons Convention, 96th Congress, 2nd Session, May 29, 1980; also, Leslie Gelb, "Keeping an Eye on Russia: A Mysterious Event in Sverdlovsk Raises Doubts about Arms Treaty Surveillance," New York Times Magazine, November 29, 1981.

[8]See Wall Street Journal editorials, November 3, 6, 13 and 23 and December 18, 1981, for early discussion of CBW violations. An important elaboration of the Journal's coverage of Soviet CBW use is Robert L. Bartley and William P. Kucewicz, "'Yellow Rain' and the Future of Arms Agreements," Foreign Affairs, Vol. 61, No. 4, pp. 805-826.

[9]This was suggested as early as 1980. See Matthew Meselson and Julian Perry Robinson, "Chemical Warfare and Chemical Disarmament," Scientific American, Vol. 242, No. 4, April 1980, pp. 38-47.

[10]Wall Street Journal Review and Outlook, "Tiptoe through the Toxins," December 1, 1982, p. 28.

[11]See the records of the Adelman confirmation hearings, U.S. Congress, Senate, Committee on Foreign Relations, Nomination of Kenneth L. Adelman for Director of the Arms Control and Disarmament Agency, 98th Congress, 1st Session, January 27, February 3, 16, 24, 1983.

[12]See U.N. Secretary-General, 1981-1984 (Perez de Cuellar), Report on Alleged Violations of Chemical and Biological Treaties, U.N. Document A/37/259, December, 1982. For a summary of the report, see Steve Mufron, "U.N. Report on Chemical-Warfare Probe Calls Proof of Soviet Use 'Circumstantial,'" Wall Street Journal, December 3, 1982.

[13]See Wall Street Journal Review and Outlook, "Anyone Serious?" November 13, 1981, pp. 11-12.

[14]See especially Stockholm International Peace Research Institute, The Problems of Chemical and Biological Warfare, Vols. 1-6 (Stockholm: Humanities Press, 1971-75), for a comprehensive discussion of the CBW question, including weapons, arms control and verification.

[15]Independent Commission on Disarmament and Security Issues, Common Security: A Blueprint for Survival (New York: Simon & Schuster, Inc.). The Commission's composition suggested that it favored arms control and disarmament.

CHAPTER 8

Conclusion

ISMA's Potential Contribution to Arms Control

An ISMA's contribution to arms control has been said by its proponents to be in its provision of an international, and therefore impartial, assessment of compliance with arms control agreements by the parties to them. This would, in their view, avoid the destabilizing effects of charges of possible violations against a state that was, in fact, complying with such agreements. It would also reassure the community of nations that arms control agreements were being honored. Proponents of an ISMA have been able to argue that it could perform these functions because they have taken as valid the assumptions about satellite verification capabilities and compliance policy, prevalent in the theoretical arms control literature. These have been summarized as the five assumptions in the simple model of verification and compliance.

The validity of each of these five assumptions has been tested by comparing their predictions about the verification of, and compliance with, arms control agreements, with the available evidence from the most relevant agreements from the 1922 Washington Treaty to the 1979 SALT II Treaty. Although not an arms control treaty per se, the arms control provisions of the 1919 Versailles Treaty were also con-

sidered. These tests demonstrated that none of these five assumptions are wholly valid. On the contrary, in each case they proved more the reverse of the reality. Since an ISMA could only make an effective contribution to arms control if all five assumptions were individually valid, producing the necessary synergistic effects, it must be concluded that an ISMA would be unlikely to be able to make as effective a contribution to arms control as might be hoped.

This negative finding is disappointing. It is also based on the explicit assumption that an ISMA could be so organized and financed as to have the requisite technical verification capabilities. From the evidence examined, this appears unlikely. An ISMA would lack access to the classified information necessary to interpret such information on compliance with arms control agreements. Its information gathering capabilities would also be limited. Moreover, judging from the Soviet use of their nationals in the U.N. Secretariat, and in U.N. agencies, as agents of the Soviet government, it seems unlikely that the Soviets would allow an ISMA that was a U.N. agency to find them guilty of non-compliance, even if it were able to obtain convincing evidence of this. And it would have great difficulty in doing so. The Soviet Union has not, so far, strongly opposed the ISMA idea. But Soviet motives for not doing so do not appear to include improving

the verification of their compliance with arms control agreements.[1]

Paradoxically, U.S. opposition to the ISMA proposal appears to be based on the increased importance assigned to effective verification by the Reagan Administration. This was shown by their early insistence that a Comprehensive Test Ban (CTB) Treaty cannot be verified by existing U.S. NTM of verification. This Administration also appears likely to insist on some form of on-site inspection, or verification, of the 1974 Threshold Test-Ban Treaty (TTBT).[2] Convincing evidence of Soviet violation of the 1925 Geneva Protocol and the 1972 Biological Weapons Convention has reinforced the U.S. need for improved verification to ensure Soviet compliance with arms control agreements. So has the President's Report on Soviet Non-Compliance. This also applies to compliance by the Soviet Union's enforced allies in the Warsaw Pact (Czechoslovakia, East Germany, Hungary and Poland plus Romania) and her other allies, notably Cuba and North Vietnam. An ISMA would have difficulty in contributing to verification but could, in the U.S. view, distract attention from the real, increasingly important, issues of verification and compliance. It is not, therefore, surprising that the U.S. has felt it had to oppose the concept.

Net Assessment: ISMA's Potential Contribution to Crisis Management

Because this report is necessarily speculative, it has not been considered in much detail what contribution an ISMA might make to arms control. Theoretically, it seems that it would be much easier for an ISMA to contribute to the apparently more technical, less politically controversial, task of verifying compliance with arms control agreements. In fact, an ISMA would have difficulty in performing this more limited task partly because it would, involve difficult political judgments. It seems probable that it would be even less able to contribute to the management of crises. Both superpowers have extensive command, control, communications and intelligence (C^3I) facilities for crisis management. President Reagan proposed, on November 22, 1982, that these facilities be upgraded as part of a package of confidence building measures (CBM).[3] The U.S. has also used their C^3I networks to inform her allies of developments in crises affecting their interests and to diffuse crises. The same does not appear to be true of the Soviets. It is therefore difficult to see what additional useful contribution an ISMA could make to crisis management, given its technical and political limitations. Moreover, not all conflicts in the post-war world have occurred because Country A (or Alliance A) wrongly feared surprise

attack from Country B (or Alliance B) and launched an unnecessary pre-emptive strike. This is the classic arms control model of crisis escalation through reciprocal fear of surprise attack.[4] It sometimes does, but sometimes does not, occur in the real world. What has also happened is that Country A (or Alliance A) has decided that it can only protect, or advance, its interests by engaging in armed conflict with Country B (or Alliance B).

At a more philosophical level, a fundamental problem is that international society remains anarchical in the sense of lacking a government to enforce laws. The ultimate arbiter in international disputes thus remains, regrettably, the armed forces of the disputing states.[5] As for an ISMA, if a U.N. agency, with no armed forces under its command, its theoretical contribution to crisis management would be limited to providing information on the movements, or non-movements, of military forces in the area of crisis. For the reasons discussed above, it seems unlikely that an ISMA's technical capabilities, especially in interpretation, would be adequate even for this contribution. It would also seem likely to experience an organizational breakdown if it attempted to manage a crisis involving any of the major Alliance groupings. The members of Alliance A could not allow an ISMA to manage a crisis in favor of Alliance B, and vice-versa.

Conclusion

Although an ISMA is a theoretically attractive concept it is based on assumptions that do not appear to correspond to the available evidence on the verification of compliance with arms control agreements. It also appears that an ISMA would have great difficulty in acquiring the technical capabilities needed to contribute to this. It must therefore be concluded that an ISMA would be unlikely to be able to contribute significantly to the verification of, or enforcement of compliance with, arms control agreements. Similarly, it must be concluded that an ISMA would be unlikely to be able to contribute significantly to the management of international crises.

These negative conclusions are reinforced by three additional considerations. First, an ISMA would face considerable technical and political difficulties in functioning at all, let alone with the very high standard of competence necessary to contribute to arms control and crisis management. Second, it would, accordingly, be difficult to secure the necessarily large financing from U.N. member states, especially the Western states who bear a disproportionate burden of current U.N. financing. Third, the U.S., for legitimate motives, opposes the establishment of an ISMA.

It is therefore concluded that an ISMA would be unlikely to be able to contribute to arms control and crisis management.

Notes

[1]Since the Soviets are violating several major arms control agreements and are not complying with others, their interests require them to oppose improved verification and an effective Western and Third World compliance policy. In defense of the original ISMA proposals, it must be noted that the nature and extent of Soviet violations of the spirit of arms control agreements has exceeded the most pessimistic predictions of the early 1970s.

[2]See, e.g., Arms Control Today, "Verification Issue," Vol. 13, No. 5, June 1983.

[3]See, Arms Control Today, Vol. 13, No. 1, January/February 1983, pp. 9-10.

[4]This idea is particularly associated with Thomas C. Schelling, and is extensively discussed in Thomas C. Schelling and Morton Halperin, cited in Chapter 2, footnote 1.

[5]These points are usefully restated in Hedley Bull, The Anarchical Society: A Study of Order in World Politics (New York: Macmillan, 1977). The consequences of this unfortunate situation for U.N. attempts to assist in the peaceful resolution of crises have been all too clearly demonstrated by the recent war in the Lebanon. The U.N. Interim Force in Lebanon (UNIFIL) was actually a 7,000-man observation force, established in 1976. It was increasingly unable to provide the security Israel regarded as necessary against Palestinian attacks on Israel from Lebanese territory. Israel therefore launched, in 1982, a military attack on the Palestinians and the 25,000-strong Syrian forces in Lebanon, driving these out of Southern Lebanon. The U.N. was unable to make a significant contribution to managing the crisis because its membership was sharply divided along the lines of two of the most fundamental political and ideological conflicts of the late Twentieth Century: the East-West and Arab-Israeli conflicts. It is also important, from the crisis management viewpoint, that there were very sharp divisions over how it should be managed within the Western Alliance, within the Arab world, and between the U.S. and Israel.

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UNCLASSIFIED
Security Classification

DOCUMENT CONTROL DATA - R & D
(Security classification of title, body of abstract and indexing annotation must be entered when the overall document is classified)

1. ORIGINATING ACTIVITY
Department of National Defence
Operational Research and Analysis
Establishment

2a. DOCUMENT SECURITY CLASSIFICATION
UNCLASSIFIED

2b. GROUP

3. DOCUMENT TITLE
The Arms Control and Crisis Management Potential of the Proposed International Satellite Monitoring Agency (ISMA)

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

5. AUTHOR(S) (Last name, first name, middle initial)
Ranger, Robin

6. DOCUMENT DATE
December 1984

7a. TOTAL NO. OF PAGES
137

7b. NO. OF REFS

8a. PROJECT OR GRANT NO.
96104

9a. ORIGINATOR'S DOCUMENT NUMBER(S)
ORAE Extra-Mural Paper No. 34

8b. CONTRACT NO.
2SV82-00007

9b. OTHER DOCUMENT NO.(S) (Any other numbers that may be assigned this document)

10. DISTRIBUTION STATEMENT
Unlimited distribution

11. SUPPLEMENTARY NOTES

12. SPONSORING ACTIVITY
ORAE

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This study investigates the potential contribution of an International Satellite Monitoring Agency (ISMA) to the verification of compliance with arms control agreements and also to crisis management. The basic characteristics of an ISMA and the theoretical bases for its contribution are outlined, as are the potential practical difficulties it is likely to encounter in principle. An assessment is then given of the limitations of verification capabilities and the resultant problems posed for compliance policy in a representative selection of arms control agreements--those limiting strategic nuclear forces, chemical and biological weapons and, in the inter-war years, naval forces.

The conclusion is that there are considerable technical and political limits on verification capabilitites and on enforcing compliance with such agreements. These limits have proved significantly larger than anticipated in the arms control literature. They suggest that an ISMA would have difficulty, in practice, in making the contribution to arms control envisaged in theory. A similar conclusion applies to the more demanding task of contributing to crisis management.

DSIS
72-159

KEY WORDS

Arms control
Chemical and biological weapons
Compliance
Crisis management
France
ICBM
National Technical Means (NTM)
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